



Industria y Comercio
SUPERINTENDENCIA

Delegatura de Propiedad Industrial

División de Nuevas Creaciones

SOLICITUD

PATENTE DE INVENCION

21. EXPEDIENTE No.

05-90242

54. TITULO

METODO PARA SEÑALIZAR LA ADAPTACION DE CALIDAD DE FLUJO Y LOS
MECANISMOS DE CONTROL EN UN FLUJO DE MULTIMEDIA

51. CLASIFICACION INTERNACIONAL

71. SOLICITANTE

NOKIA CORPORATION

DOMICILIO

Espoo, Finlandia.

74. APODERADO

EMILIO FERRERO

C.C. 438.019 de Usaquén.

22. BOGOTA, D.C.,


Industria y Comercio

SUPERINTENDENCIA

PETITORIO

SUPERINDUSTRIA Y COMERCIO

Radicación: 2005-09-07/ 17/07/54

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Fecha (MM/AA/YY): 2005-09-07/ 17/07/54

Frente: 1 011 PCT-PATENT 379 FASE NACI 411 PRESEMIAC

Dependencia: 2005 DIVISION DE NUEVAS CREACIONES

**FORMULARIO UNICO DE SOLICITUD DE PATENTE
PCT
ENTRADA EN FASE NACIONAL**
SOLICITUD DE:

1

☒ Patente de Invención.

☐ Patente de Modelo de Utilidad.

☐ Capítulo I.

☒ Capítulo II.

2

**S LICITANTE
(71)**

 Nombre: **NOKIA CORPORATION**
sociedad constituida y existente bajo las
leyes de Finlandia.

 Dirección: Keilalahdentie 4,
FIN-02150, Espoo,
Finlandia.

 Domicilio: Espoo,
Finlandia.

IDENTIFICACIÓN

 C.C. ☐ NIT ☐

 C.E. ☐ Otro ☐

Cual _____

Número _____

3

**REPRESENTANTE
APODERADO**

 Nombre: **EMILIO FERRERO**
Dirección: Carrera 4ª. No. 72-35
Teléfono: 347 36 11
Fax: 217 92 11
E-mail: clientes@camyp.com.
Domicilio: Bogotá, Colombia.

IDENTIFICACIÓN

 C.C. ☒ NIT ☐

 C.E. ☐ Otro ☐

Cual _____

 Número 438.019 T.P. 31.929

4

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 2. Igor Danilo Diego CURCIO
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5

PCT (86)

 Solicitud Internacional No. PCT/IB2004/000374

 Fecha: 13 de febrero de 2004

 Publicación Internacional No. WO 2004/072765 A2

 Fecha: 26 de agosto de 2004

6

Título (54)
**MÉTODO PARA SEÑALIZAR LA ADAPTACIÓN DE CALIDAD DE FLUJO Y LOS
MECANISMOS DE CONTROL EN UN FLUJO DE MULTIMEDIA**

7

Clasificación Internacional (51) G06F

8

Prioridad

 SI ☒ NO ☐

(33) País de Origen

US.
US.
US.
US.

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13 de febrero de 2003
14 de febrero de 2003
14 de febrero de 2003
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60/447.264
60/448.284
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60/448.309

9

 Comprobante de pago No.: 05 - 67.458

 Fecha: 5 de septiembre de 2005

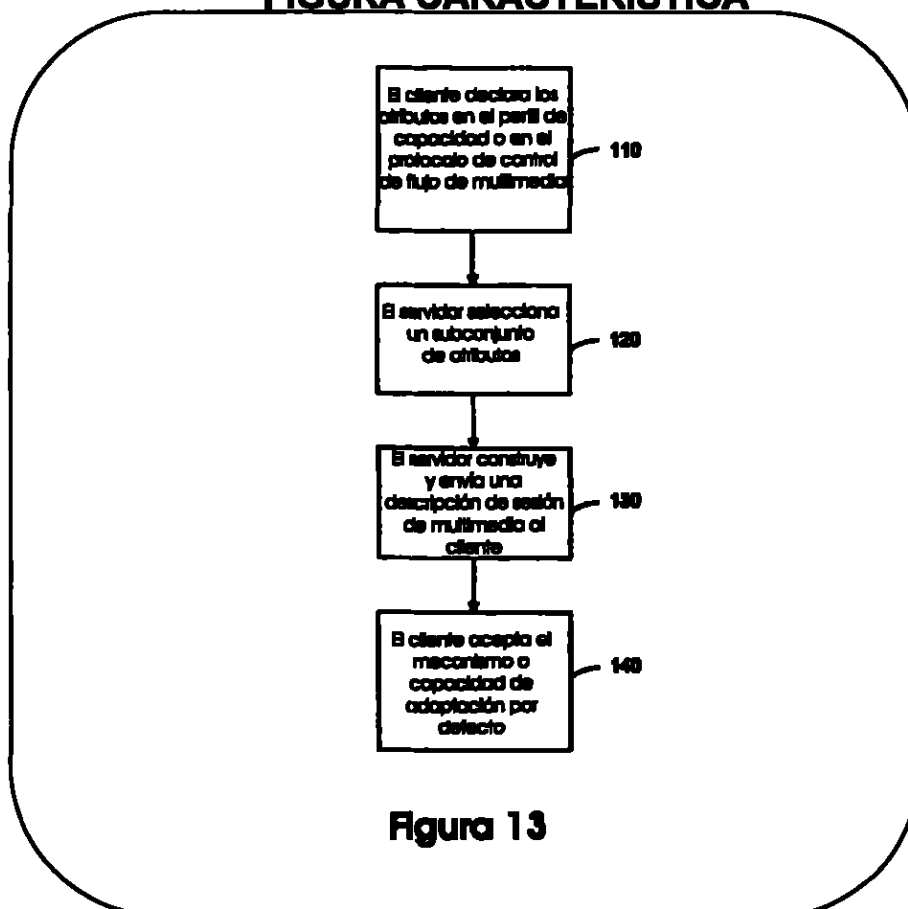
10

Anex s:

- ☒ Comprobante de pago de la tasa de presentación de la solicitud por \$ 443.000.00.
- ☐ Comprobante de pago por reivindicación de prioridad.
- ☒ Documento que acredita la existencia y representación legal cuando el solicitante sea persona jurídica.
- ☒ Poderes, si fuere el caso.
- ☐ Documento de cesión del inventor al solicitante o a su causante.
- ☐ Declaraciones.
- ☒ Copia de la solicitud internacional. (Resumen, descripción, reivindicaciones, dibujos)
- ☒ Traducción de la solicitud internacional al castellano. (Resumen, descripción, reivindicaciones, dibujos)
- ☒ Copia del examen preliminar efectuado por la IPEA.
- ☐ Traducción del examen preliminar efectuado por la IPEA.
- ☐ De ser el caso, copia del contrato de acceso.
- ☐ De ser el caso, documento que acredite la licencia o autorización de uso de conocimientos tradicionales de las comunidades indígenas.
- ☐ De ser el caso, certificado de depósito del material biológico.
- ☒ Arte final 12x12
- ☐ De ser el caso, información sobre otras solicitudes de patente o títulos obtenidos en el extranjero por el mismo titular o su causante, relacionadas parcial o totalmente con la invención de esta solicitud.
- ☒ Otros: Hoja de documentos anexos.

11

FIGURA CARACTERÍSTICA



12

Solicito la concesión de la patente,

N MBRE:

EMILIO FERRERO

FIRMA :

C.C. 438.019 de Usaquén T.P. 31.929

CAVELIER

ABOGADOS
EDIFICIO SISKI
CARRERA 4a. No. 72-35
BOGOTA-8, COLOMBIA

For patents, designs, trademarks, service marks, commercial names, ensigns.

Para patentes, modelos, dibujos, marcas de fábrica y de servicio, nombres comerciales y enseñas.

calo. 5995

PODER

Yo (nosotros), abajo firmado (s)

domiciliado (s) en

por el presente conferimos poder a GERMAN CAVELIER, GONZALO PERDOMO y ERNESTO CAVELIER, domiciliados en Carrera 4a. No. 72-35, Bogotá, Colombia, para

y para obtener la protección de mi (nuestra) propiedad industrial, y contra la competencia desleal, a cuyo efecto autorizo (amos) a los dichos apoderados para que me(nos) represente(n) ante cualesquiera entidades o personas, ejerzan o no jurisdicción, especialmente ante las del orden administrativo, contencioso-administrativo y judicial, en todo lo concerniente a los siguientes asuntos: a) Obtención de patentes de invención, modelos y dibujos industriales; el registro de marcas de fábrica, colectivas, defensivas y de servicio; el depósito de nombres comerciales y enseñas; su renovación, traspaso, cambio de nombre o domicilio, cancelación voluntaria, y el registro de licencias de uso de esos derechos; b) las acciones de oposición, cancelación, nulidad, medidas cautelares, concesión de licencias y en general los procesos civiles, penales, administrativos o contencioso-administrativos relacionados con estos derechos; acciones y procesos que promovamos o se nos promuevan; y c) para que en todos los asuntos arriba determinados, puedan sustituir este poder, transigir, desistir, cancelar, recibir, renunciar, aceptar notificaciones nombrar apoderados judiciales y extrajudiciales, y ratificar los actos de agentes oficiosos.

Dado y firmado hoy

en

TRADUCCION OFICIAL No. 043/89
ALICIA GROOT
INTERPRETE OFICIAL
RESOLUCION No. 215, ABRIL 17, 1988
DEL MINISTERIO DE JUSTICIA

NOKIA CORPORATION

Pekka Kallavuo

Assistant Vice President
Financial Planning

I (we), the undersigned

NOKIA CORPORATION

of Helsinki, Finland, with offices at Keilalahdentie, 4 02150 Espoo, Finland. hereby grant to GERMAN CAVELIER, GONZALO PERDOMO and ERNESTO CAVELIER, domiciled at Carrera 4a. No. 72-35, Bogotá, Colombia, Power of Attorney to

register the trade mark NOKIA and the trade mark NOKIA device

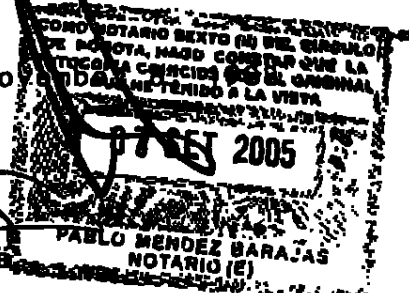
and to

obtain the protection of my (our) industrial property and against unfair competition, for which purpose I (we) authorize the said attorneys to represent us before any authorities or persons, with or without jurisdiction, specially those administrative, administrative contentious and judicial, in all matters concerning the following: a) Obtainment of patents, models and designs; the registration of trademarks, collective, defensive and service marks; the deposit of commercial names and ensigns; its renewal, assignment, change of name or domicile, voluntary cancellation; and the registration of licenses of use of the above rights; b) actions of opposition, cancellation, nullity, infringement, granting of licenses; and in general the civil, penal, and administrative suits relating to those rights; actions and suits instituted by me (us) or against me (us); and that in all the above matters they may substitute this Power of Attorney, compromise, desist, cancel, receive, renounce, accept notifications appoint attorneys-in-fact in or out of Court, and ratify the acts made by agents without power of attorney.

Given and signed this

in Helsinki, November

signature
General Counsel



This is to certify the above own hand signatures of Olli-Pekka Kallasvuo and Taavi Heinilä and that they are legally authorized jointly to sign Nokia Corporation;

Helsinki City-Hall, the 14 th of November 1988

By virtue of office

Olli-Pekka Siro
Notary Public

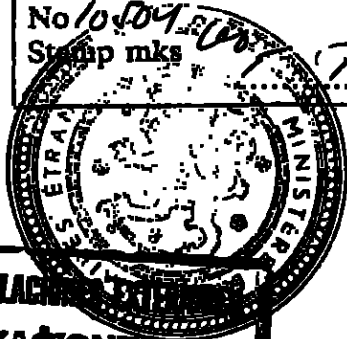


The Ministry for Foreign Affairs certify, that Olli-Pekka Siro Notary Public, Helsinki whose signature and seal appear under the foregoing certificate, is authorized to issue certificates of that nature.

Helsinki, November 29 1988

No 10504
Stamp mks

Paula Laamanen
PAULA LAAMANEN
Departmental Secretary



MINISTERIO DE RELACIONES EXTERIORES

LEGALIZACIONES

1-MAR-1989
No 43434

HACE CONSTAR
Nicolas Salazar
Quel el señor Nicolas Salazar
cuya firma aparece al pie del presente documento, desempeñaba en esa fecha las funciones allí indicadas.
CONSULADO DE COLOMBIA
Helsinki, 12-12-1988 Número 436/88
Paula Laamanen
Secretaria Departamental de Relaciones Helsinki
que en el documento aparece como autenticada en sus funciones.

MISAEEL E. MOSCOSO ACUNA
Jefe de Negocios Generales
División Consular
El Consulado no asume responsabilidad alguna por el contenido del documento cuya firma se autentica.

TRADUCCION OFICIAL No. 043/89
ALICIA GROOT
INTERPRETE OFICIAL
RESOLUCION No. 2185, ABRIL 17, 1988
DEL MINISTERIO DE JUSTICIA.



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US\$ - = -marcos
Cambio 11US\$ =

NOTARIO SEXTO (E) DEL CIRCUNSCRITO NOTARIAL, HAGO CONSTAR QUE LA COPIA COINCIDE CON EL ORIGINAL QUE HE TENIDO A LA VISTA
07 SET 2005
PABLO MENDEZ GARCIA
NOTARIO (E)

DERECHOS A PAGAR
EN COLOMBIA

FEB 28 1989

881051766146

BANCO DE CALDAS
AVDA CHILE

27 BANCO DE CALDAS 2

FEB. 28 1989



DECLARACION Y PAGO DEL IMPUESTO DE TIMBRE NACIONAL

BANCO DE CALDAS
RECIBIDO CON PAGO
18-037-01-002526-8
18-037-01-002526-8

DATOS GENERALES

1 Administración de Impuestos de: BOGOTA	Código 03	2 Teléfono 2120100
3 Documento de identificación (marque X) C.C. ó T.I. ☐ NIT. ☒ No. 860041367 D.V. 3	4 Apellidos y Nombres o Razón Social de las partes (máximo 60 caracteres). CAVELIER ABOGADOS	
5 C.C. ó T.I. ☒ NIT. ☐ No. 19'30 1.629 D.V. ☐	6 Apellidos y Nombres o Razón Social de las partes (máximo 60 caracteres). FORERO ROCHA JAIME	

CONCEPTO

7 Dirección (de la persona o entidad identificada en la casilla 4) Cra. 4a. No. 72-35	Municipio BOGOTA	Departamento CUNDINAMARCA	8 Número documentos timbrados. 1
9 Rotación (el/los tipo/s) de documento(s) indicando número, fecha, valor y naturaleza de la transacción. TIMBRE DERECHOS CONSULARES DE UN PODER DE NOVIEMBRE 8 DE 1988 PAGO DERECHOS QUE CAUSA LA FIRMA CONSULAR COLO 5995-51-001-2			

REVISADO
DE NEGOCIOS CONSULARES
JES

Responsable del pago
Nombre [Firma]
C.C. No. 19301629-3

PAGO EN BANCOS FORMA VALORES	1 VALOR DEL IMPUESTO A PAGAR	VP	4200
	2 Sanciones	VS	0
	3 Intereses de mora	EM	0
	4 TOTAL A PAGAR (renglones 1 + 2 + 3)	TP	4200
Efectivo ☒ Cheque ☐ No. 1		Código Banco 1	

TRADUCCION OFICIAL No. **043/89**
ANITA GROOT
INTERPRETE OFICIAL
RESOLUCION No. 2185, ABRIL 17, 1989
DEL MINISTERIO DE JUSTICIA

BANCO DE CALDAS
AVDA CHILE
FEB. 28 1989

CONTRIBUYENTE

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NOTA: EL CONTRIBUYENTE DEBE CONFECCIONAR ESTE DOCUMENTO CON EL ORIGINAL QUE SE HAYAN EN LA VISTA

07 SET 2005

PABLO MENDEZ BARAJAS
NOTARIO (E)

C NSULAD GENERAL DE COLOMBIA

CONSULADO GENERAL DE COLOMBIA EN HELSINKI No. 004

El suscrito Encargado de las Funciones Consulares de Colombia en Helsinki, vistos los documentos presentados por los interesados: CERTIFICA

Que el Señor Olli-Pekka Siro, quien como Notario Público en Helsinki autenticó la firma de los Señores Olli-Pekka Kallasvuo, Asistente del Vice-presidente de Planeación Financiera de Nokia Corporación y del Señor Taavi Heinilä, Abogado General de Nokia Corporation, ejercía en la fecha las funciones indicadas, de conformidad con la legalización de su firma por parte de la Señora Paula Laamanen, Secretaria de Departamento en el Ministerio de Relaciones Exteriores de Helsinki. Que la compañía Nokia Corporation, con sede en Helsinki; es una sociedad constituida de acuerdo con las leyes de Finlandia y cumple su objeto conforme a las mismas. Que los Señores Olli-Pekka Kallasvuo y Taavi Heinilä, están debidamente autorizados para suscribir el presente documento de acuerdo con los Estatutos respectivos y su firma fué autenticada por el Notario Público de Helsinki, quien dió fe de lo anterior, como consta en el documento anexo.

El Encargado de las Funciones Consulares no asume responsabilidad alguna por el contenido del presente documento.

Se expide esta certificación en Helsinki, a los seis (6) días del mes de Febrero de mil novecientos ochenta y nueve (1989)

Derechos percibidos

US\$ 6. = 20.000

Cambio 1US\$ = 4.7

MINISTERIO DE RELACIONES EXTERIORES

LEGALIZACIONES

1 - MAR. 1989 No. 04333

Bogotá

HACE CONSTAR

Que el señor Nicolas Sabon

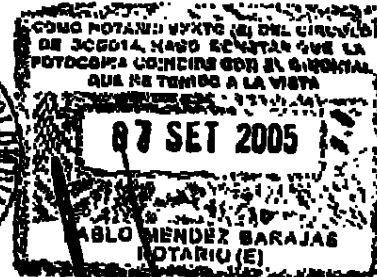
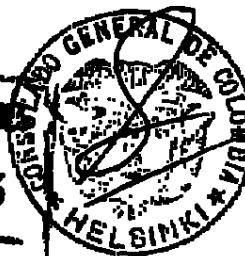
cuya firma aparece al pie del presente documento, desempeñaba en esa fecha las funciones de Abogado General

MISAE E. MOSCOSO ACUÑA

Jefe de Negocios Generales

División Consular

Encargado



TRADUCCION OFICIAL No. 043/89

ALICIA GROOT

INTERPRETE OFICIAL

RESOLUCION No. 2165, A/R.L. 17. 1988

DEL MINISTERIO DE JUSTICIA.

AVDn CHILK

MAR. 6 - 1969

RECIBIDO CON PAGO

18-037-01-002545-1

STATOS GENERALIS

F I R M A

CONTRIBUYENTE

RECIBIDO CON PAGO

MM 100450

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TRADUCCION OFICIAL No. 043/89 de un documento escrito en Inglés, el cual para su identificación se sella con el sello del traductor lo mismo que la presente. -----

Autenticaciones que se hallan a continuación de un Poder, escrito en Inglés y en Español, otorgado por la sociedad NOKIA CORPORATION a los doctores GERMAN CAVELIER, GONZALO PERDOMO y ERNESTO CAVELIER.

Dado y firmado el día 8 de noviembre de 1988, en Helsinki, Finlandia.

NOKIA CORPORATION

(firmado) (firma ilegible)

Olli-Pekka Kallasvuo

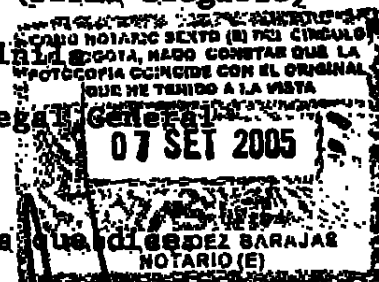
Vicepresidente Adjunto

Planeación Financiera

(firmado) (firma ilegible)

Taavi Heinila

Asesor Legal General



Al dorso hay una certificación en Inglés que dice: Por medio del presente se certifican las anteriores firmas de puño y letra de Olli-Pekka Kallasvuo y Taavi Heinila y que están legalmente autorizados para firmar conjuntamente por Nokia Corporation:

Helsinki, Ayuntamiento, Noviembre 14 de 1988.

Por virtud del cargo:

(firmado) (firma ilegible)

Olli-Pekka Siro

Notario Público

Sello Notarial.

Hay un sello en inglés que dice:

El Ministerio de Relaciones Exteriores certifica que Olli-Pekka Siro, Notario Público de Helsinki, cuya firma y sello aparecen en el anterior certificado, está autorizado para expedir certificados de esa naturaleza.

Helsinki, Noviembre 29 de 1988.

TRADUCCION OFICIAL No. 043/89
ALICIA GROOT
INTERPRETE OFICIAL
RESOLUCION No. 1189, ABRIL 17, 1988
DEL MINISTERIO DE JUSTICIA.

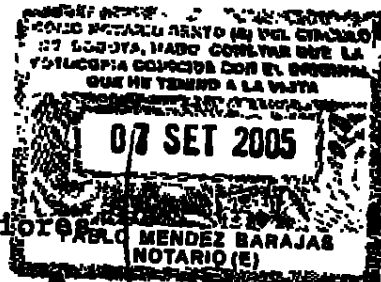
No. 10504

Estampilla mks(sic) (ilegible)

(firmado) Paula Laamanen

Secretaría Departamental

Sello del Ministerio de Relaciones Exteriores



En español, legalizaciones de la firma que antecede, hasta por el Ministerio de Relaciones Exteriores de la República de Colombia, bajo los Números 043433 y 043434, de fecha 10. de marzo de 1989.

Derechos Consulares pagados por la suma de Ps.\$4.200, según recibo No. 881051766146, del Banco de Caldas, Sucursal Avenida Chile, de fecha 28 de febrero de 1989.

ES TRADUCCION FIEL Y COMPLETA del documento en referencia.

Bogotá, Marzo 5 de 1989.

AG/c.

Alicia Groot

TRADUCCION OFICIAL No. 043/89
ALICIA GROOT
INTERPRETE OFICIAL
RESOLUCION No. 2120, ABRIL 17, 1988
DEL MINISTERIO DE JUSTICIA.

COMO NOTARIO SEXTO DE BOGOTA
HAGO CONSTAR QUE LA FIRMA
QUE AUTORIZA ESTE DOCUMENTO
Y QUE DICE:

Alicia Groot

ES AUTENTICA
BOGOTA



MINISTERIO DE RELACIONES
EXTERIORES

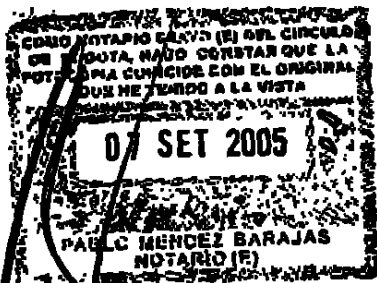
112660

ALICIA GROOT
CUYA FIRMA APARECE EN EL
DOCUMENTO DESEMPLEA
LAS FUNCIONES INDICADAS

NO SE ASUME
RESPONSABILIDAD DEL TEXTO

2001 MAR 1 A 11:51

JEFES DE LEGALIZACIONES
SANTAFE DE BOGOTA D.C.



CAVELIER

ABOGADOS

9

WEB SITE: www.caveller-abogados.com
E-MAIL: caveller@colombia.net.co

EDIFICIO SISKI
CARRERA 4 No. 72 - 35
BOGOTÁ 8, COLOMBIA

TELEFONO: (57) (1) 347-3611
TELEFAX: (57) (1) 217-9211 (57) (1) 310-4995

Señora Jefe de la

DIVISION DE NUEVAS CREACIONES

Superintendencia de Industria y Comercio

E. S. D.

Poderdante: NOKIA CORPORATION

Poder conferido el: 08-11-88

Yo, GERMAN CAVELIER, obrando en mi calidad de apoderado principal del poderdante arriba mencionado, atentamente manifiesto a Usted que sustituyo el poder que me ha sido conferido en la persona del doctor EMILIO FERRERO, Abogado con Tarjeta Profesional No. 31.929, con todas las facultades que me fueron conferidas.

Hago la anterior sustitución conforme al artículo 66 del Código de Procedimiento Civil ya que los otros sustitutos faltan en este momento.

Señora Jefe,


GERMAN CAVELIER

T.P.A. No. 832

C.C. No. 2.877.924 de Bogotá

Acepto:


EMILIO FERRERO

T.P.A. N° 31.929

C.C. No. 438.019 de Usaquén

2e-780-2

NIT. 860.041.367-3

...ARIA SEXTA DE BOGOTÁ
RECONOCIMIENTO Y PRESENTACION PERSONAL
BOGOTÁ, D.C.
26 ENE. 2004
Frente al JUAN MANUEL BOTERO MEDINA
NOTARIO SEXTO DEL CIRCULO DE BOGOTÁ

Comparecieron:

quien/aa) exhibió(eron) la(s) C.T.

y declaró(aron) que la(s) firma(s) que aparece(n)
en el presente documento es(son) la(s) cuya(s) y
que el contenido del mismo es cierto. En constan-
cia se firma este diligencia.

Gonzalo Cuervo

Emilio Rosero





1. ☒ **Publicación Internacional WO WO 2004/072765 A2**

Descripción:

Páginas 17 en el idioma original

Páginas 28 en español

Reivindicaciones: Número (s) 7

Figuras: Número (s) 14

2. ☐ **Forma PCT/RO/101. PCT Request**
3. ☐ **Forma PCT/RO/106. Invitation to Correct Defects.**
4. ☒ **Forma PCT/ISA/210. Informe de Búsqueda Internacional.**
5. ☒ **Forma PCT/ISA/220. Notificación De La Transmisión Del Informe De Búsqueda Internacional Y De La Opinión Escrita De La Administración Encargada De La Búsqueda Internacional, O De La Declaración.**
6. ☒ **Forma PCT/ISA/237. Opinión Escrita De La Administración Encargada De La Búsqueda Internacional.**
7. ☐ **Forma PCT/IB/304. Notification Concerning Submission Or Transmittal Of Priority Document.**
8. ☒ **Forma PCT/IB/306. Notification Of The Recoding Of A Change.**
Descripción De Modificación:
9. ☒ **Forma PCT/IB/308. Notice Informing The Applicant Of The Communication Of The International Application To The Designated Offices.**
10. ☒ **Forma PCT/IB/318 From the International Bureau**
11. ☐ **Forma PCT/IB/332. Information Concerning Elected Offices Notified Of Their Election.**
12. ☒ **Forma PCT/IPEA/401. PCT Demand**
13. ☒ **Forma PCT/IPEA/402. Notification Of Receipt Of Demand By Competent International Preliminary Examining Authority.**
14. ☐ **Forma PCT/IPEA/408. Written Opinion.**
15. ☒ **Forma PCT/IPEA/416. Notification Of Transmittal Of The International Preliminary Examination Report.**
16. ☒ **Forma PCT/IPEA/409. Informe Del Examen Preliminar Internacional.**
17. ☐ **Traducción Al Español Del Informe Del Examen Preliminar Internacional.**
18. ☐ **Traducción Al Español De Los Anexos Presentados Junto Con El Informe Del Examen Preliminar Internacional.**
19. ☒ **Extracto de publicación.**

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
26 August 2004 (26.08.2004)

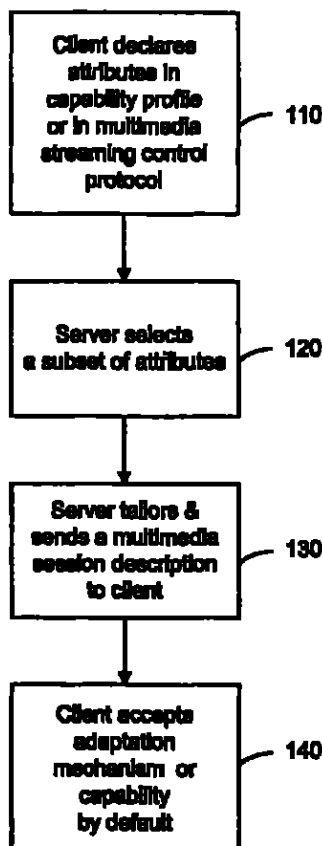
PCT

(10) International Publication Number
WO 2004/072765 A2

- (51) International Patent Classification⁷: G06F (71) Applicant (for LC only): NOKIA INC. [US/US]; 6000 Connection Drive, Irving, TX 75039 (US).
- (21) International Application Number: PCT/IB2004/000374 (72) Inventors; and (73) Inventors/Applicants (for US only): AKSU, Emre, Baris [TR/PT]; Atomikatu 5 A 12, FIN-33721 Tampere (FI). CURCIO, Igor, Danilo, Diego [IT/PT]; Hatanpääntie 12 C 57, FIN-33100 Tampere (FI). LEON, David [FR/US]; 900 Meadow Creek Drive #3061, Irving, TX 75038 (US). VARSA, Viktor [HU/US]; 6215 Love Drive, #2437, Irving, TX 75039 (US). WANG, Ru-Shang [—/US]; 272 Enclaves Ct., Coppell, TX 75019 (US).
- (22) International Filing Date: 13 February 2004 (13.02.2004)
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(54) Title: METHOD FOR SIGNALING STREAMING QUALITY ADAPTATION AND CONTROL MECHANISMS IN MULTIMEDIA STREAMING



(57) Abstract: A method of signaling and negotiation between a client and a server in a multimedia streaming service regarding the adaptation of the data delivery process. In order to make sure that the client supports the adaptation mechanisms or capabilities to be used in data delivery, one of the parties provides information indicating the adaptation mechanism or capability that it supports to the other party. Upon receiving the information, the other party uses well-defined RTSP response to indicate the support of that mechanism or capability. Either the server or the client can initiate the negotiation. The implementation of the signaling and negotiation covers an AVPF usage, RTP Retransmission Payload Format usage, and an SPTP usage in a particular 3G PSS session.

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METHOD FOR SIGNALING STREAMING QUALITY ADAPTATION AND CONTROL MECHANISMS IN MULTIMEDIA STREAMING

Field of the Invention

5 The present invention relates generally to multimedia streaming and, more particularly, to signaling of streaming quality adaptation and control mechanism.

Background of the Invention

10 In a multimedia streaming service, there are three participants involved: a streaming server, a streaming client and an underlying network which provides the connectivity between the server and the client. The server provides the functionality to deliver the multimedia streaming content to the client. For that purpose, the client and server communicate with each other over the network regarding the methods of capability exchange, content delivery method negotiation, content delivery control, and so forth.

15 Such information exchange can be carried out via well-defined network protocols.

 For a multimedia streaming session to be set up and started successfully, the server and the client need to support a minimal set of protocols, which are selected as standard protocols by the service. An example of such a service can be found in 3GPP TS 26.234 V5.1.0, "Transparent End-to-End Packet Switched Streaming Service (PSS);

20 Protocols and Codecs (Release 5)", June 2002, hereafter referred to as TS 26.234). Furthermore, in order for a service to be successful from the data delivery and playback performance point of view, the *data delivery control* mechanisms in the service must also be well-defined. Such mechanisms are used to *adapt* the data delivery process in order to cause the changes of behavior in the underlying network characteristics.

25 Three possible adaptation processes based on the *decisive control location* of the adaptation mechanisms or capabilities are as follows:

Client-Driven Adaptation

 The client has control of the adaptation functionality or capability and makes the

30 necessary decisions for adaptation. The decisions are based on information gathered from the network, the server, or other sources of information within the service definition.

Server-Driven Adaptation

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The server has control of the adaptation functionality or capability and makes the necessary decisions for adaptation. The decisions are based on information gathered from the network, the client, or other sources of information within the service definition.

5 Cooperative Adaptation

Control of the adaptation functionality or capability is distributed between the server and the client. Both the server and the client can take actions for adaptation based on the information gathered from the network, the server, the client, or other sources of information within the service definition.

10

Within the service context, there may be more than one *adaptation mechanism or capability* defined within the context of each of the above-mentioned *adaptation processes*. It may be the case that each of these *adaptation mechanisms or capabilities* is standardized within the service, but kept *optional* for a server or client to implement.

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Therefore, there is a certain need for a *capability identification mechanism* to identify the supported adaptation mechanisms or capabilities and an *adaptation capability signaling and negotiation mechanism* for the server and client to agree on the usage of a particular set of adaptation mechanisms or capabilities defined within the service context.

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In prior art, Annex G of 3G PSS (Rel.5) defines a signaling mechanism, which can be used to signal the usage and support parameters, but this is not a complete solution.

Summary of the Invention

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The present invention provides a method of signaling and negotiation between a client and a server in a multimedia streaming service regarding the adaptation of the data delivery process. The method can be carried out using a capability exchange mechanism, or using a multimedia streaming control protocol. The method of signaling and negotiation, according to the present invention, can be implemented in AVPF (Extended RTP profile for PTCP-based feedback) usage in a particular 3G PSS session; RTP retransmission payload format usage in a particular 3G PSS session; and SRTP usage in a particular 3G PSS session.

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The method, according to the present invention, can be carried out when the Multimedia Streaming Service has well-defined and/or standardized adaptation processes, and each adaptation process is composed of well-defined and/or standardized

mechanisms, which are tools to render the adaptation functionality or capability functional. Furthermore, each adaptation mechanism or capability has an attribute that is well-defined and/or standardized within the service context, or well-known between the server and the client.

Accordingly, the present invention provides a method for signaling and negotiation between a client and a server in a multimedia streaming service, wherein a plurality of adaptation mechanisms or capabilities for use in the service for data delivery are supported by the client, each adaptation mechanism or capability having an attribute. The method comprises:

the client providing information indicative of the attributes defining the adaptation mechanisms or capabilities that are supported by the client;

the server selecting one or more of the attributes based on the provided information; and

the server providing further information indicative of the selected attributes so as to allow the client to know the one or more adaptation mechanisms or capabilities defined by the one or more attributes selected by the server.

According to the present invention, the client provides the information via a capability exchange mechanism, or via a multimedia streaming control protocol.

Alternatively, the method comprises:

providing by one of the two parties to the other of the two parties information indicative of one or more attributes defining one or more of the adaptation mechanisms or capabilities; and

conveying a message from said other party to said party, in response to the information, acknowledging supporting of said one or more adaptation mechanisms or capabilities.

Either the client or the server can initiate the negotiation. If the client initiates the negotiation, the client provides a plurality of attributes to the server, and the server selects one or more of the provided attributes based on the provided information for acknowledging the support.

Brief Description of the Drawing

Figure 1 shows a declaration by a client as part of the signaling and negotiation process, according to the present invention.

Figure 2 shows the SDP description sent by the server to indicate the selected attributes to the client, according to the present invention.

Figure 3 shows the SDP description in an RTSP message sent by the server.

Figure 4 shows an RTSP DESCRIBE response sent by the server.

5 Figure 5 shows a declaration by the client as part of the signaling and negotiation process, according to another embodiment of the present invention.

Figure 6 shows the SDP description sent by the server to indicate the selected attributes to the client, according to the other embodiment of the present invention.

Figure 7 shows the SDP description in an RTSP message sent by the server.

10 Figure 8 shows an RTSP DESCRIBE response sent by the server.

Figure 9 shows a declaration by the client as part of the signaling and negotiation process, according to yet another embodiment of the present invention.

Figure 10 shows the SDP description sent by the server to indicate the selected attributes to the client, according to the present invention.

15 Figure 11 shows the SDP description in an RTSP message sent by the server.

Figure 12 shows an RTSP DESCRIBE response sent by the server.

Figure 13 is a flowchart illustrating the method of signaling and negotiation between a client and a server regarding the adaptation of a data delivery process, wherein the client initiates the negotiation.

20 Figure 14 is a flowchart illustrating the method of signaling and negotiation wherein the server initiates the negotiation.

Detailed Description of the Invention

The method of signaling and negotiation between a client and a server in a multimedia streaming service regarding the adaptation of the data delivery process, according to the present invention, can be carried out via a capability exchange mechanism or via a multimedia stream control protocol. The adaptation of the data delivery process is based on one or more attributes of one or more adaptation mechanisms or capabilities, which are used to determine the adaptation processes in a Multimedia Streaming Service.

30 When the signaling and negotiation is carried out via a capability exchange mechanism, the procedure is described as follows:

- The client declares in its capability profile defined for a capability exchange mechanism the attributes of the adaptation mechanisms or capabilities implemented by the client;

- The server obtains the capability profile;
- As the server knows which adaptation mechanisms or capabilities are implemented by the client, the server selects a subset of the attributes that do not conflict with the adaptation processes. According to the selected subset of attributes, the server tailors the multimedia session description and declares the session description to the client; and
- Based on the session description, the client knows the adaptation mechanism or capability selection carried out by the server for the particular multimedia session. The client accepts the adaptation mechanisms or capabilities declared in the session description by default, because the declared description contains a subset of the attributes or adaptation mechanism capabilities declared by the client.

When the signaling and negotiation is carried out via a multimedia streaming control protocol, the procedure is described as follows:

- The client includes the attributes of the adaptation mechanism or capability implemented by the client in the Multimedia Streaming Control Protocol defined for the control of the streaming session;
- Based on those attributes, the server knows which adaptation mechanisms or capabilities are implemented or required by the client. The server selects a subset of attributes that do not conflict with the adaptation processes and signals to the client the selected or non-selected attributes. Depending on the current phase of the control communication, the server may tailor the multimedia session description according to the selected attributes and declare the session description to the client; and
- Based on the response from the server, the client knows which attributes are selected by the server. The client accepts by default the adaptation mechanisms or capabilities defined by the attributes selected by the server, because the selected adaptation mechanisms or capabilities are a subset of the adaptation mechanisms or capabilities declared by the client.

The method of signaling and negotiation, according to the present invention, can be implemented in the multimedia streaming service based on TS 26.234 or later releases.

The implementation covers the definition, signaling and negotiation of the following mechanisms:

- an AVPF usage in a particular 3G PSS session (see, for example, IETF draft-ietf-avt-rtcp-feedback-04: "Extended RTP profile for RTCP-based Feedback (RTP/AVPF)", Ott et al., 2002, hereafter referred to as *draft-avpf-04*);
- an RTP Retransmission Payload Format usage in a particular 3G PSS session (see, for example, IETF draft-ietf-avt-rtp-retransmission-05: "RTP Retransmission Payload Format", Rey et al., 2002, hereafter referred to as *draft-retransmission-05*); and
- an SPTP usage in a particular 3G PSS session (see, for example, IETF draft-ietf-avt-srtp-05: "The Secure Real-time Transport Protocol", Baugher et al., 2002, hereafter referred to as *draft-srtp-05*).

I. AVPF usage in a particular 3G PSS session

If AVPF, as defined in *draft-avpf-04* is supported by the client, and the client signals the AVPF support, then the server may use any combination of AVPF features as defined in *draft-avpf-04* in the adaptation process. The client may also signal each supportable feature of AVPF (e.g., immediate feedback mode, early RTCP packet support, etc.) separately, if there's a well-defined mechanism identifier for that feature.

Let the attribute "AVPFSupport" be defined in the RDF (Resource Description Framework) Schema vocabulary to signal the support of AVPF defined in *draft-avpf-04* for audio and video media.

Let the attribute "UnSupportedAdaptationSupport" be defined in the RDF Schema vocabulary as an adaptation mechanism or capability, which is supported by the client, but not by the server.

Let the attribute "SupportedAdaptationSupport" be defined in the RDF Schema vocabulary as an adaptation mechanism or capability, which is also supported by the server.

Let "x-avpfesupport" be a well-defined SDP (Session Description Protocol) attribute, which is included in the audio and video (or the session-level for usage in both media types) media section of the SDP when AVPF is supported.

Let "x-unsupportedadaptationssupport" be a well-defined SDP attribute, which is included in the SDP (session or media level) when supported.

Let "x-supportedadaptationsupport" be a well-defined SDP attribute, which is included in the SDP (session or media level) when supported.

A. Signalling and negotiation via a possible capacity exchange mechanism:

- 5 - The client sends an RTSP DESCRIBE request to the server with a URI pointing to the client capability information residing in a capability exchange server.
 - The server fetches the capability declaration of the client from the capability exchange server. The declaration includes a part for the client-side streaming capabilities, as shown in Figure 1.
- 10 The bold lines in the declaration represent the adaptation mechanism support capabilities of the client. It should be noted that when an attribute value is TRUE, the mechanism or capability is supported by the client. Conversely, when the attribute value is FALSE, the mechanism or capability is not supported by the client. For example, if the attribute AVPFsupport is TRUE, it declares that the client has the AVPF support for audio
- 15 and video media components in a particular session.
- Seeing this capability, the server tailors the SDP description to be sent to the client including the AVPF capability and the SupportedAdaptationSupport capability. The SDP description is shown in Figure 2. The server does not include the SDP attributes based on the UnsupportedAdaptationSupport, because it does not have support for it. The bold lines
- 20 in the SDP description indicate the usage of the AVPF and the support for SupportedAdaptationSupport.
- By receiving this SDP description, the client knows that AVPF will be used for the video component, but not for the audio component. It is also possible that AVPF be used for both audio and video media components. In such a case, "x-avpfsupport"
- 25 would be a session-level SDP attribute. Client also understands that UnsupportedAptationSupport will not be used and SupportedAdaptationSupport mechanism or capability will be used for both audio and video media.

B. Signalling and negotiation via a possible Multimedia Streaming Control Protocol:

- 30 In 3G PSS, RTSP protocol is used to control the multimedia session.
- Let "x-avpfsupport" be a well-defined RTSP option tag, which indicates AVPF support on the client.

20

Let "x-unsupportedadaptationsupport" be a well-defined RTSP option tag, which is signalled in the RTSP message when supported by the client. It is assumed that the mechanism represented by this tag is not supported by the server.

Let "x-supportedadaptationsupport" be a well-defined RTSP option tag, which is signalled in the RTSP message when supported by the client.

The client is assumed to know the RTSP URL for the multimedia session.

- The client sends a DESCRIBE request with the selection of preferred adaptation mechanisms or capabilities:

Client->Server:

DESCRIBE rtsp://foo/twister RTSP/1.0

CSeq: 1

Require: x-avpfsupport, x-unsupportedadaptationsupport, x-supportedadaptationsupport

- The client uses the RTSP Require request header to signal the supported mechanisms or capabilities.

- In order for the server to successfully tailor the SDP according to the mechanisms or capabilities supported by the client, the client signals the mechanisms or capabilities supported in an RTSP request prior to or at RTSP DESCRIBE method.

- The server checks the RTSP request and sees that it can use x-avpfsupport and x-supportedadaptationsupport, but not x-unsupportedadaptationsupport.

The server has two possible ways to respond:

ALTERNATIVE 1:

- Server sends an RTSP 551 "Option Not Supported" Response, including the unsupported mechanisms and capabilities in the message body:

Server->Client

RTSP/1.0 551 Option not supported

CSeq: 1

Unsupported: x-unsupportedadaptationsupport

- Client issues another DESCRIBE request with only the supported mechanisms or capabilities:

5 Client->Server :

DESCRIBE rtsp://foo.twister RTSP/1.0

CSeq: 2

Require: x-avpfsupport, x-supportedadaptationsupport

- 10 - Server responds with an RTSP 200 OK message, also containing SDP description as shown in Figure 3.

ALTERNATIVE 2:

- 15 - Server sends a RTSP DESCRIBE response, containing unsupported mechanism/capability information without an RTSP 551 status response. The RTSP DESCRIBE response is shown in Figure 4.

- 20 - Server uses RTSP Unsupported response header to signal the unsupported mechanism or the adaptation mechanisms or capabilities that are not possible to use for the particular session, and uses the appropriate SDP attributes to signal the usage of the selected adaptation mechanisms or capabilities.

- When the client receives the DESCRIBE response with the SDP description, it knows which set of adaptation mechanisms or capabilities are selected for usage in this particular session.

- 25 In the case that the client receives the SDP description from another source, e.g. via MMS, the client can analyze the SDP description and find out the RTSP session URL. Then, it can send an RTSP DESCRIBE request to signal and negotiate the adaptation mechanisms or capabilities. The client can tailor the set of adaptation mechanisms or capabilities by analyzing the MMS retrieved SDP description beforehand. This solves the confusion on the server side, because the server does not exactly know the content of the
- 30 SDP description in such a usage scenario.

II. RTP Retransmission Payload Format usage in a particular 3G PSS session

Let the attribute "RtxSupport" be defined in the RDF Schema vocabulary to signal the usage of the RTP retransmission mechanism defined in draft-retransmission for audio and video media. RTX Support is automatically defined AVPF support on the client side.

5 Let the attribute "UnSupportedAdaptationSupport" be defined in the RDF Schema vocabulary as an adaptation mechanism or capability, which is not supported by the server, but the client.

Let the attribute "SupportedAdaptationSupport" be defined in the RDF Schema vocabulary as an adaptation mechanism or capability, which is also supported by the server.

10 Let "x-rtxsupport" be a well-defined SDP attribute which is included in the audio and video (or the session-level for usage in both media types) media section of the SDP when RTP retransmission payload format is supported.

Let "x-unsupportedadaptationsupport" be a well-defined SDP attribute which is included in the SDP (session or media level) when supported.

15 Let "x-supportedadaptationsupport" be a well-defined SDP attribute which is included in the SDP (session or media level) when supported.

A. Signalling and Negotiation via a Possible Capability Exchange Mechanism

- The client sends an RTSP DESCRIBE request to the server with a URI pointing to the client capability information residing in a capability exchange server.
- The server fetches the capability declaration of the client from the capability exchange server. The declaration includes a part for the client-side streaming capabilities, as shown in Figure 5.

25 The bold lines in the declaration represent the adaptation mechanism support capabilities of the client. RtxSupport, when TRUE, declares that the client has the RTP retransmission payload format support for audio and video media components in a particular session.

- Seeing this capability, the server tailors the SDP description to be sent to the client, including the RTP Retransmission capability and the SupportedAdaptationSupport capability. The SDP description is shown in Figure 6. The server does not include the SDP attributes based on the UnsupportedAdaptationSupport, because it does not have support for it. The bold lines in the SDP description indicate the usage of the RTP Retransmission payload format and the support for SupportedAdaptationSupport.

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- By receiving this SDP description, the client knows that RTP retransmission will be used for the video component, but not for the audio component. It also understands that **UnsupportedAdaptationSupport** will not be used and **SupportedAdaptationSupport** mechanism or capability will be used for both audio and video media.

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B. Signalling and Negotiation via a possible Multimedia Streaming Control Protocol

In 3G PSS, RTSP protocol is used to control the multimedia session.

Let "x-rtpsupport" be a well-defined RTSP option tag, which indicates RTP retransmission payload format is supported by the client.

- 10 Let "x-unsupportedadaptationsupport" be a well-defined RTSP option tag, which is signalled in the RTSP message when supported by the client. Assume that the mechanism or capability represented by this tag is not supported by the server.

Let "x-supportedadaptationsupport" be a well-defined RTSP option tag, which is signalled in the RTSP message when supported by the client.

- 15 The client is assumed to know the RTSP URL for the multimedia session.

- The client sends a DESCRIBE request with the selection of preferred adaptation mechanisms or capabilities:

20 Client->Server :

DESCRIBE rtsp://foo.twister RTSP/1.0

CSeq: 1

Require: x-rtpsupport, x-unsupportedadaptationsupport, x-supportedadaptationsupport

25

- The client uses the RTSP Require request header to signal the supported *adaptation mechanisms or capabilities*.

- In order for the server to successfully tailor the SDP according to the adaptation mechanisms or capabilities supported by the client, the client signals the adaptation

30 mechanisms or capabilities supported in an RTSP request prior to or at RTSP DESCRIBE method.

- The server checks the RTSP request and sees that it can use x-rtpsupport and x-supportedadaptationsupport, but not use x-unsupportedadaptationsupport.

The server has two possible ways to respond:

ALTERNATIVE 1:

- Server sends RTSP 551 "Option Not Supported" Response, including the unsupported mechanisms or capabilities in the message body.

Server->Client

RTSP/1.0 551 Option not supported

CSeq: 1

10 Unsupported: x-unsupportedadaptationsupport

- Client issues another DESCRIBE request with only the supported mechanisms or capabilities:

15 Client->Server :

DESCRIBE rtsp://foo/twister RTSP/1.0

CSeq: 2

Require: x-rtcsupport, x-supportedadaptationsupport

- Server responds with RTSP 200 OK message, also containing an SDP description as shown in Figure 7.

ALTERNATIVE 2:

- Server sends an RTSP DESCRIBE response, containing unsupported mechanism/capability information without RTSP 551 status response. The RTSP DESCRIBE response is shown in Figure 8.

- The server uses RTSP Unsupported response header to signal the unsupported mechanism or the adaptation mechanisms or capabilities that are not possible to use for the particular session, and uses the appropriate SDP attributes to signal the usage of the selected adaptation mechanisms or capabilities.

- When client receives the DESCRIBE response with the SDP description, it knows which set of adaptation mechanisms or capabilities are selected for usage in this particular session.

- In the case that the client receives the SDP description from another source, e.g. via MMS, the client analyzes the SDP description and find out the RTSP session URL.

Then, it sends an RTSP DESCRIBE request to signal and negotiate the adaptation mechanisms or capabilities. The client can tailor the set of adaptation mechanisms or capabilities by analyzing the MMS retrieved SDP description beforehand. This solves the confusion on the server side, because the server does not exactly know the content of the SDP description in such a usage scenario.

III. SRTP usage in a particular 3G PSS session

Let the attribute "SRTPSupport" be defined in the RDF Schema vocabulary to signal the support of SRTP defined in *draft-srtp-05* for audio and video media.

Let the attribute "UnSupportedAdaptationSupport" be defined in the RDF Schema vocabulary as an adaptation mechanism or capability, which is supported by the client, but not by the server.

Let the attribute "SupportedAdaptationSupport" be defined in the RDF Schema vocabulary as an adaptation mechanism or capability, which is also supported by the server.

Let "x-rtpsupport" be a well-defined SDP attribute which is included in the audio and video (or the session-level for usage in both media types) media section of the SDP when SRTP is supported.

Let "x-unsupportedadaptationsupport" be a well-defined SDP attribute which is included in the SDP (session or media level) when supported.

Let "x-supportedadaptationsupport" be a well-defined SDP attribute which is included in the SDP (session or media level) when supported.

A. Signalling and Negotiation via a Possible Capability Exchange Mechanism

- The client sends an RTSP DESCRIBE request to the server with a URI pointing to the client capability information residing in a capability exchange server.
- The server fetches the capability declaration of the client from the capability exchange server. The declaration includes a part for the client-side streaming capabilities, as shown in Figure 9. The bold lines in the declaration represent the adaptation mechanism support capabilities of the client. SRTPSupport, when TRUE, declares that the client has the SRTP support for audio and video media components in a particular session.
- Seeing this capability, the server tailors the SDP description to be sent to the client including the SRTP capability and the SupportedAdaptationSupport capability. The SDP

description is shown in Figure 10. The server does not include the SDP attributes based on the **UnsupportedAdaptationSupport**, because it does not have support for it.

The bold lines in the SDP description indicate the usage of the SRTP and the support for **SupportedAdaptationSupport**.

- 5 - By receiving this SDP description, the client knows that SRTP will be used for video and audio components. Client also understands that **UnsupportedAdaptationSupport** is not going to be used and **SupportedAdaptationSupport** mechanism or capability will be used for both audio and video media.

10 B. Signalling and Negotiation via a possible Multimedia Streaming Control Protocol

In 3G PSS, RTSP protocol is used to control the multimedia session.

Let "x-rtspsupport" be a well-defined RTSP option tag, which indicates SRTP support on the client.

- 15 Let "x-unsupportedadaptationsupport" be a well-defined RTSP option tag, which is signalled in the RTSP message when supported by the client. Assume that the mechanism or capability represented by this tag is not supported by the server.

Let "x-supportedadaptationsupport" be a well-defined RTSP option tag, which is signalled in the RTSP message when supported by the client.

The client is assumed to know the RTSP URL for the multimedia session.

20

- The client sends a DESCRIBE request with the selection of preferred adaptation mechanisms or capabilities:

Client->Server :

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DESCRIBE rtsp://foo/twister RTSP/1.0

CSeq: 1

Require: **x-rtspsupport**, **x-unsupportedadaptationsupport**, **x-supportedadaptationsupport**

30

- The client uses the RTSP Require request header to signal the supported mechanisms or capabilities.

In order for the server to successfully tailor the SDP according to the mechanisms or capabilities supported by the client, the client signals the mechanisms or capabilities supported in an RTSP request prior to or at RTSP DESCRIBE method.

- The server checks the RTSP request and sees that it can use x-rtpsupport and x-supportedadaptationsupport, but not x-unsupportedadaptationsupport.

The server has two possible ways to respond:

5

ALTERNATIVE 1:

- Server sends RTSP 551 "Option Not Supported" Response, including the unsupported mechanisms or capabilities in the message body.

10 Server->Client

RTSP/1.0 551 Option not supported

CSeq: 1

Unsupported: x-unsupportedadaptationsupport

- 15
- Client issues another DESCRIBE request with only the supported mechanisms or capabilities:

Client->Server :

DESCRIBE rtsp://foo.twister RTSP/1.0

20 CSeq: 2

Require: x-rtpsupport, x-supportedadaptationsupport

- Server responds with RTSP 200 OK message, also containing an SDP description as shown in Figure 11.

25

ALTERNATIVE 2:

- Server sends an RTSP DESCRIBE response, containing unsupported mechanism/capability information without RTSP 551 status response. The RTSP DESCRIBE response is shown in Figure 12.

- 30
- The server uses RTSP Unsupported response header to signal the unsupported mechanism or the adaptation mechanisms or capabilities that are not possible to use for the particular session, and uses the appropriate SDP attributes to signal the usage of the selected adaptation mechanisms or capabilities.

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- When client receives the DESCRIBE response with the SDP description, it knows which set of adaptation mechanisms or capabilities are selected for usage in this particular session.

5 In the case that the client receives the SDP description from another source, e.g. via MMS, the client analyzes the SDP description and find out the RTSP session URL. Then, it sends an RTSP DESCRIBE request to signal and negotiate the adaptation mechanisms or capabilities. The client can tailor the set of adaptation mechanisms or capabilities by analysing the MMS retrieved SDP description beforehand. This solves the confusion on the server side, because the server does not exactly know the content of the
10 SDP description in such a usage scenario.

In sum, the present invention provides a method of signaling and negotiation between a client and a server in a multimedia streaming service system regarding the adaptation of a data delivery process. The procedure for the signaling and negotiation can be illustrated by Figure 13. As shown in the flowchart in Figure 13, in order to negotiate an adaptation mechanism or capability, the client signals to the server a plurality of attributes to the client at step 110. These attributes are those of the adaptation mechanisms or capabilities implemented by the client. The attributes are included either
15 in client's capability profile defined for a capability exchange mechanism, or in the multimedia streaming control protocol defined for the control of the streaming session. At step 120, the server obtains the attributes from the capability profile or the multimedia streaming control protocol, and selects a subset of these attributes. Based on the selected attributes, the server tailors a multimedia session description and sends the description to the client at step 130. Based on the session description, the client knows the attributes
20 selected by the server. At step 140, the client accepts the adaptation mechanisms or capabilities defined by the selected attributes at default. The signaling and negotiation method, according to the present invention, can be implemented in an AVPT usage, an RTP Retransmission Payload Format usage or an SPTP usage in a particular 3G PSS session.

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30 It should be noted that the method of signaling and negotiation, according to the present invention, can also be initiated by the server, as illustrated in the flowchart shown in Figure 14. As shown, the server indicates to the client, at step 210, the adaptation mechanism or capability without client's initiation. In this case, there is no indication of the adaptation mechanism or capability from the client side, but from the server side.

After obtaining the indication from the server, the client uses a well-defined attribute in the RSTP response to indicate, at step 220, its support for that capability to the server.

Thus, although the invention has been described with respect to a preferred embodiment thereof, it will be understood by those skilled in the art that the foregoing
5 and various other changes, omissions and deviations in the form and detail thereof may be made without departing from the scope of this invention.

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What is claimed is:

1. A method for signaling and negotiation between a client and a server in a multimedia streaming service, wherein a plurality of adaptation mechanisms or capabilities for use in the service for data delivery are supported by the client, each adaptation mechanism or capability having an attribute, said method characterized by:
 - the client providing information indicative of the attributes defining the adaptation mechanisms or capabilities that are supported by the client;
 - the server selecting one or more of the attributes based on the provided information; and
 - the server providing further information indicative of the selected attributes so as to allow the client to know the one or more adaptation mechanisms or capabilities defined by the one or more attributes selected by the server.
2. The method of claim 1, characterized in that the client provides the information via a capability exchange mechanism.
3. The method of claim 1, characterized in that the client provides the information via a multimedia streaming control protocol.
4. The method of claim 1, further characterized by
 - the server providing indication of a capability to the client prior to the client providing information.
5. A method for signaling and negotiation between two parties including a client and a server in a multimedia streaming service, wherein a plurality of adaptation mechanisms or capabilities for use in the server for data delivery are supported by the client, each adaptation mechanism or capability having an attribute, said method characterized by:
 - providing by one of the two parties to the other of the two parties information indicative of one or more adaptation mechanisms or capabilities; and
 - conveying a message from said other party to said party, in response to the information, acknowledging supporting of said one or more adaptation mechanisms or capabilities.

6. The method of claim 5, characterized in that said one party is the server and the other party is the client, and that

the client acknowledges support by using the attributes defining said one or more adaptation mechanisms or capabilities in the responding message.

5

7. The method of claim 5, characterized in that said one party is the client and the other party is the server, and that

the client provides a plurality of attributes; and

10 the server selects one or more of the provided attributes based on the provided information for acknowledging the support.

```

<ccpp:component>
  <rdf:Description ID="Streaming">
    <rdf:type rdf:resource="http://www.3gpp.org/profiles/PSS/ccppschem-
PSS6#Streaming" />
    <pss6:AudioChannels>Stereo</pss6:AudioChannels>
    <pss6:VideoPreDecoderBufferSize>30720</pss6:VideoPreDecoderBufferSize>
    <pss6:VideoInitialPostDecoderBufferingPeriod>0</pss6:VideoInitialPostDecoderBuf
feringPeriod>
    <pss6:VideoDecodingByteRate>16000</pss6:VideoDecodingByteRate>
    <pss6:RenderingScreenSize>73x50</pss6:RenderingScreenSize>
    <pss6:AVPFSupport>TRUE</pss6:AVPFSupport>
    <pss6:UnsupportedAdaptationSupport>TRUE</pss6:UnsupportedAdaptationSuppo
rt>
    <pss6:SupportedAdaptationSupport>TRUE</pss6:SupportedAdaptationSupp
ort>
    <pss6:PssAccept>
      <rdf:Bag>
        <rdf:li>audio/AMR-WB;octet-alignment</rdf:li>
        <rdf:li>video/MP4V-ES</rdf:li>
      </rdf:Bag>
    </pss6:PssAccept>
    <pss6:PssAccept-Subset>
      <rdf:Bag>
        <rdf:li>JPEG-PSS</rdf:li>
      </rdf:Bag>
    </pss6:PssAccept-Subset>
    <pss6:PssVersion>3GPP-R6</pss6:PssVersion>
    <pss6:RenderingScreenSize>70x40</pss6:RenderingScreenSize>
    <pss6:SmilBaseSet>SMIL-3GPP-R4</pss6:SmilBaseSet>
    <pss6:SmilModules>
      <rdf:Bag>
        <rdf:li>BasicTransitions</rdf:li>
        <rdf:li>MultiArcTiming</rdf:li>
      </rdf:Bag>
    </pss6:SmilModules>
  </rdf:Description>
</ccpp:component>
...

```

FIG. 1

v=0
o=alice 3203093520 3203093520 IN IP4 host.example.com
s=Adaptation support example
t=Example of Unicast SDP file
u=http://www.infoserver.com/aes600
e=ghost@mailserver.com
t=0 0
a=range: npt=0-300
a=x-supportedadaptationsupport
m=audio 0 RTP/AVP 96
b=AS:5
c=IN IP4 0.0.0.0
a=rtpmap:96 AMR-NB/8000
m=video 0 RTP/AVPF 98
b=AS:64
c=IN IP4 0.0.0.0
a=rtpmap:98 H263-2000/90000
a=fmtp:98 profile=3;level=10
a=x-avpfsupport
a=rtcp-fb:* nack
a=rtcp-fb:98 nack rpsi

FIG. 2

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Server->Client**RTSP/1.0 200 OK****CSeq: 2****Content-Type: application/sdp****Content-Length: 164****v=0****o=alice 3203093520 3203093520 IN IP4 host.example.com****s=Adaptation support example****i=Example of Unicast SDP file****u=http://www.infoserver.com/ae600****e=ghost@mailserver.com****t=0 0****a=range: npt=0-300****a= x-supportedadaptationssupport****m=audio 0 RTP/AVP 96****b= AS:5****c=IN IP4 0.0.0.0****a=rtpmap:96 AMR-NB/8000****m=video 0 RTP/AVPF 98****b=AS:64****c=IN IP4 0.0.0.0****a=rtpmap:98 H263-2000/90000****a=fmtp:98 profile=3;level=10****a=x-avpfsupport****a=rtcp-fb:* nack****a=rtcp-fb:98 nack rpsl****FIG. 3**

Server->Client

RTSP/1.0 200 OK

CSeq: 1

Unsupported: x-unsupportedadaptationsupport

Content-Type: application/sdp

Content-Length: 164

v=0

o=alice 3203093520 3203093520 IN IP4 host.example.com

s=Adaptation support example

l=Example of Unicast SDP file

u=http://www.infoserver.com/ae600

e=ghost@mailserver.com

t=0 0

a=range: npt=0-300

a= x-supportedadaptationsupport

m=audio 0 RTP/AVP 96

b= AS:5

c=IN IP4 0.0.0.0

a=rtpmap:96 AMR-NB/8000

m=video 0 RTP/AVPF 98

b=AS:64

c=IN IP4 0.0.0.0

a=rtpmap:98 H263-2000/90000

a=fmtp:98 profile=3;level=10

a=x-avpfsupport

a=rtcp-fb:* nack

a=rtcp-fb:98 nack rpsi

FIG. 4

```

...
<ccpp:component>
  <rdf:Description ID="Streaming">
    <rdf:type rdf:resource="http://www.3gpp.org/profiles/PSS/ccppschem-
PSS6#Streaming" />
    <pss6:AudioChannels>Stereo</pss6:AudioChannels>
    <pss6:VideoPreDecoderBufferSize>30720</pss6:VideoPreDecoderBufferSize>
    <pss6:VideoInitialPostDecoderBufferingPeriod>0</pss6:VideoInitialPostDecoderBuf
feringPeriod>
    <pss6:VideoDecodingByteRate>16000</pss6:VideoDecodingByteRate>
    <pss6:RenderingScreenSize>73x50</pss6:RenderingScreenSize>
    <pss6:RtxSupport>TRUE</pss6:RtxSupport>
    <pss6:UnsupportedAdaptationSupport>TRUE</pss6:UnsupportedAdaptation
Support>
    <pss6:SupportedAdaptationSupport>TRUE</pss6:SupportedAdaptationSupp
ort>
    <pss6:PssAccept>
      <rdf:Bag>
        <rdf:li>audio/AMR-WB;octet-alignment</rdf:li>
        <rdf:li>video/MP4V-ES</rdf:li>
      </rdf:Bag>
    </pss6:PssAccept>
    <pss6:PssAccept-Subset>
      <rdf:Bag>
        <rdf:li>JPEG-PSS</rdf:li>
      </rdf:Bag>
    </pss6:PssAccept-Subset>
    <pss6:PssVersion>3GPP-R6</pss6:PssVersion>
    <pss6:RenderingScreenSize>70x40</pss6:RenderingScreenSize>
    <pss6:SmilBaseSet>SMIL-3GPP-R4</pss6:SmilBaseSet>
    <pss6:SmilModules>
      <rdf:Bag>
        <rdf:li>BasicTransitions</rdf:li>
        <rdf:li>MultArcTiming</rdf:li>
      </rdf:Bag>
    </pss6:SmilModules>
  </rdf:Description>
</ccpp:component>
...

```

FIG. 5

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v=0
o=alice 3203093520 3203093520 IN IP4 host.example.com
s=Adaptation support example
t=Example of Unicast SDP file
u=http://www.infoserver.com/ae600
e=ghost@mailserver.com
t=0 0
a=range: npt=0-300
a=x-supportedadaptationsupport
m=audio 0 RTP/AVP 96
b=AS:5
c=IN IP4 0.0.0.0
a=rtpmap:96 AMR-NB/8000
m=video 0 RTP/AVPF 98 99
b=AS:64
c=IN IP4 0.0.0.0
a=rtpmap:98 H263-2000/90000
a=fmtp:98 profile=3;level=10
a=x-rtxsupport
a=rtcp-fb:* nack
a=rtcp-fb:98 nack rpsi
a=rtpmap:99 rtx/90000
a=fmtp:99 apt=96;rtx-time=3000

FIG. 6

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v=0
o=alice 3203093520 3203093520 IN IP4 host.example.com
s=Adaptation support example
i=Example of Unicast SDP file
u=http://www.infoserver.com/ae600
e=ghost@mailserver.com
t=0 0
a=range: npt=0-300
~~a=x-supportedadaptationssupport~~
m=audio 0 RTP/AVP 98
b=AS:5
c=IN IP4 0.0.0.0
a=rtpmap:98 AMR-NB/8000
m=video 0 RTP/AVPF 98 99
b=AS:64
c=IN IP4 0.0.0.0
a=rtpmap:98 H263-2000/90000
a=fmtp:98 profile=3;level=10
~~a=x-rbxsupport~~
a=rtcp-fb:* nack
a=rtcp-fb:98 nack rpsi
a=rtpmap:99 rtv/90000
~~a=fmtp:99 apt=96;rtx-time=3000~~

FIG. 7

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Server->Client

RTSP/1.0 200 OK

CSeq: 1

Unsupported: x-unsupportedadaptationsupport

Content-Type: application/sdp

Content-Length: 164

v=0

o=alice 3203093520 3203093520 IN IP4 host.example.com

s=Adaptation support example

i=Example of Unicast SDP file

u=http://www.infoserver.com/ae600

e=ghost@mailserver.com

t=0 0

a=range: npt=0-300

a=x-supportedadaptationsupport

m=audio 0 RTP/AVP 96

b=AS:5

c=IN IP4 0.0.0.0

a=rtpmap:96 AMR-NB/8000

m=video 0 RTP/AVPF 98 99

b=AS:64

c=IN IP4 0.0.0.0

a=rtpmap:98 H263-2000/90000

a=fmtp:98 profile=3;level=10

a=x-rtxsupport

a=rtcp-fb:* nack

a=rtcp-fb:98 nack rpsi

a=rtpmap:99 rtx/90000

a=fmtp:99 apt=96;rtx-time=3000

FIG. 8

...

```

<ccpp:component>
  <rdf:Description ID="Streaming">
    <rdf:type rdf:resource="http://www.3gpp.org/profiles/PSS/ccppschem-
PSS6#Streaming" />
    <pss6:AudioChannels>Stereo</pss6:AudioChannels>
    <pss6:VideoPreDecoderBufferSize>30720</pss6:VideoPreDecoderBufferSize>
    <pss6:VideoInitialPostDecoderBufferingPeriod>0</pss6:VideoInitialPostDecoderBufferi
ngPeriod>
    <pss6:VideoDecodingByteRate>16000</pss6:VideoDecodingByteRate>
    <pss6:RenderingScreenSize>73x50</pss6:RenderingScreenSize>
    <pss6:SRTPSupport>TRUE</pss6:SRTPSupport>
    <pss6:UnsupportedAdaptationSupport>TRUE</pss6:UnsupportedAdaptationSup
port>
    <pss6:SupportedAdaptationSupport>TRUE</pss6:SupportedAdaptationSupport>
    <pss6:PssAccept>
      <rdf:Bag>
        <rdf:li>audio/AMR-WB;octet-alignment</rdf:li>
        <rdf:li>video/MP4V-ES</rdf:li>
      </rdf:Bag>
    </pss6:PssAccept>
    <pss6:PssAccept-Subset>
      <rdf:Bag>
        <rdf:li>JPEG-PSS</rdf:li>
      </rdf:Bag>
    </pss6:PssAccept-Subset>
    <pss6:PssVersion>3GPP-R6</pss6:PssVersion>
    <pss6:RenderingScreenSize>70x40</pss6:RenderingScreenSize>
    <pss6:SmilBaseSet>SMIL-3GPP-R4</pss6:SmilBaseSet>
    <pss6:SmilModules>
      <rdf:Bag>
        <rdf:li>BasicTransitions</rdf:li>
        <rdf:li>MultArcTiming</rdf:li>
      </rdf:Bag>
    </pss6:SmilModules>
  </rdf:Description>
</ccpp:component>

```

...

FIG. 9

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v=0
 o=alice 3203093520 3203093520 IN IP4 host.example.com
 s=Adaptation support example
 l=Example of Unicast SDP file
 u=http://www.infoserver.com/ae600
 e=ghost@mailserver.com
 t=0 0
 a=range: npt=0-300
 a=x-supportedadaptationsupport
 a=x-rtpsupport
 <...Relevant audio and video media SDP declarations as defined in *draft-rtsp-05*>

FIG. 10

Server->Client

RTSP/1.0 200 OK
 CSeq: 2
 Content-Type: application/sdp
 Content-Length: 164

v=0
 o=alice 3203093520 3203093520 IN IP4 host.example.com
 s=Adaptation support example
 l=Example of Unicast SDP file
 u=http://www.infoserver.com/ae600
 e=ghost@mailserver.com
 t=0 0
 a=range: npt=0-300
 a=x-supportedadaptationsupport
 a=x-rtpsupport
 <...Relevant audio and video media SDP declarations as defined in *draft-rtsp-*

05>

FIG. 11

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Server->Client

RTSP/1.0 200 OK

CSeq: 1

Unsupported: x-unsupportedadaptationsupport

Content-Type: application/sdp

Content-Length: 164

v=0

o=alice 3203093520 3203093520 IN IP4 host.example.com

s=Adaptation support example

t=Example of Unicast SDP file

u=http://www.infoserver.com/ae600

e=ghost@mailserver.com

t=0 0

a=range: npt=0-300

a= x-supportedadaptationsupport

a= x-rtpsupport

<...Relevant audio and video media SDP declarations as defined in *draft-rtsp-05*>

FIG. 12

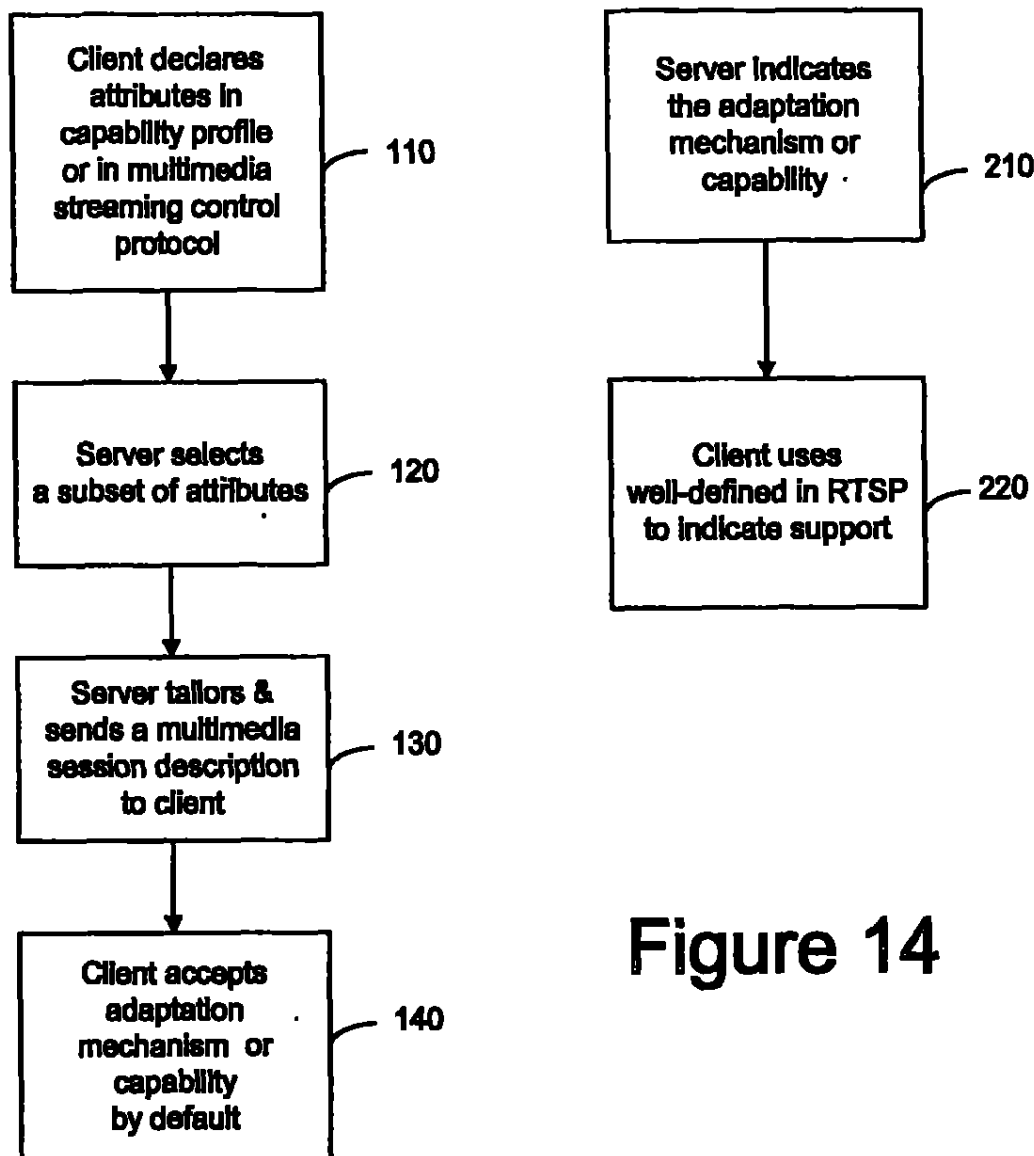


Figure 14

Figure 13

MÉTODO PARA SEÑALIZAR LA ADAPTACIÓN DE CALIDAD DE FLUJO Y LOS MECANISMOS DE CONTROL EN UN FLUJO DE MULTIMEDIA

Campo de la Invención

La presente invención se relaciona en general a flujo de multimedia y, más particularmente, a la señalización de la adaptación de la calidad de flujo y el mecanismo de control.

Antecedentes de la Invención

En un servicio de flujo de multimedia, hay tres participantes involucrados: un servidor de flujo, un cliente de flujo y una red subyacente que suministra la conectividad entre el servidor y el cliente. El servidor suministra la funcionalidad de suministrar el contenido del flujo o corriente de multimedia al cliente. Para este propósito, el cliente y el servidor se comunican cada uno con el otro por la red con respecto a los métodos de capacidad de intercambio, la negociación del método de suministro del contenido, control del suministro de contenido, etc. Tal intercambio de información puede llevarse a cabo por medio de protocolos bien definidos de red.

Para una sesión de flujo de multimedia que va a ser establecida e iniciada exitosamente, el servidor y el cliente requieren soportar un mínimo de conjunto de protocolos, que son seleccionados como protocolos estándar por el servicio. Un ejemplo de tal servicio se puede encontrar en 3GPP TS26.234 V5.1.0, "Transparent End-to-End Packet Switched Streaming Service (PSS); Protocolos y Codecs (Versión 5)", Junio 2002, referida de aquí en adelante como la TS 26.234).

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Más aún, para lograr que un servicio sea exitoso desde el suministro de datos y el punto de vista de desempeño de reproducción, los mecanismos de control de suministro de datos en el servicio deben también estar bien definidos. Tales mecanismos son usados para adaptar el proceso de suministro de datos para poder causar los cambios de comportamiento en las características de la red subyacente.

Tres procesos de adaptación posibles con base en la localización del control decisivo de los mecanismos de adaptación o capacidades de adaptación son como sigue:

Adaptación Manejada por el Cliente

El cliente tiene control de la funcionalidad o capacidad de adaptación y toma las decisiones necesarias para la adaptación. Las decisiones son basadas en información recogida de la red, el servidor, u otras fuentes de información dentro de la definición del servicio.

Adaptación Manejada por Servidor

El servidor tiene control de la funcionalidad o capacidad de adaptación y toma las decisiones necesarias para la adaptación. Las decisiones son basadas en la información recogida de la red, el cliente, u otras fuentes de información dentro de la definición del servicio.

Adaptación Cooperativa

4b

El control de la funcionalidad o capacidad de la adaptación está distribuido entre el servidor y el cliente. Ambos el servidor y el cliente pueden tomar acciones para la adaptación con base en la información recogida de la red, el servidor, el cliente, u otras fuentes de información dentro de la definición del servicio.

Dentro del contexto de servicio, puede haber más de un *mecanismo o capacidad de adaptación* definido dentro del contexto de cada uno de los *procesos de adaptación* anteriormente mencionados. Este puede ser el caso en que cada uno de estos *mecanismos o capacidades de adaptación* se ha normalizado dentro del servicio, pero mantiene *opcional* para implementarlo en un servidor o en un cliente.

Por lo tanto, existe una cierta necesidad de que un *mecanismo de identificación de capacidad* identifique los mecanismos o capacidades de adaptación soportados y un *mecanismo de negociación y señalización de capacidades de adaptación* para que el servidor y el cliente acuerden sobre el uso de un conjunto particular de mecanismos o capacidades de adaptación definidas dentro del contexto del servicio.

En el estado de la técnica, Anexo G de 3G PSS (Versión 5) se define un mecanismo de señalización, el cual puede ser usado para señalar el uso y los parámetros de soporte, pero esto no es una solución completa.

Resumen de la Invención

La presente invención suministra un método para señalar y negociar entre un cliente y un servidor en un servicio de flujo de multimedia con respecto a la

adaptación del proceso de suministro de datos. El método puede llevarse a cabo usando un mecanismo de intercambio de capacidad o usando un protocolo de control de flujo de multimedia. El método de señalar y negociar, de acuerdo con la presente invención, puede ser implementado en el uso de AVPF (Perfil Extendido para RTP para Realimentación con base en PTCP) en una sesión 3G PSS particular; un uso de un formato de carga de retransmisión RTP en una sesión 3G PSS particular; y el uso de SRTP en una sesión 3G PSS particular.

El método, de acuerdo con la presente invención, puede llevarse a cabo cuando el servicio de flujo multimedia tiene procesos de adaptación bien definidos y/o normalizados, y cada proceso de adaptación está compuesto de mecanismos bien definidos y/o normalizados, los cuales son herramientas para convertir la funcionalidad o la capacidad funcional. Más aún, cada mecanismo o capacidad de adaptación tiene un atributo que es bien definido y/o normalizado dentro del contexto de servicio, o bien conocido entre el servidor y el cliente.

De acuerdo con lo anterior, la presente invención suministra un método para señalar y negociar entre un cliente y un servidor en un servicio de flujo multimedia, en donde una pluralidad de mecanismos o capacidades de adaptación para ser usados en el servicio para el suministro de datos son soportados por el cliente, cada mecanismo o capacidad de adaptación tiene un atributo. El método comprende:

El cliente suministra información indicativa de los atributos que definen los mecanismos o capacidades de adaptación que son soportados por el cliente;

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El servidor selecciona uno o más de los atributos con base en la información suministrada; y

El servidor suministra información adicional indicativa de los atributos seleccionados de modo que le permite al cliente saber el uno o más mecanismos o capacidades de adaptación definidos por el uno o más atributos seleccionados por el servidor.

De acuerdo con la presente invención, el cliente suministra la información por vía de un mecanismo de intercambio de capacidades, o por medio de un protocolo de control de flujo multimedia.

Alternativamente, el método comprende:

Suministrar por una de las dos partes a la otra de las dos partes información indicativa de uno o más atributos que definen uno o más mecanismos o capacidades de adaptación; y

Transportar un mensaje desde dicha otra parte a dicha parte, en respuesta la información, reconociendo el soporte de dicho uno o más mecanismos o capacidades de adaptación.

Tanto el cliente como el servidor pueden iniciar la negociación. Si el cliente inicia la negociación, el cliente suministra una pluralidad de atributos al servidor; y el servidor selecciona uno o más de los atributos suministrados con base en la información provista para reconocer el soporte.

Breve Descripción de los Dibujos

La Figura 1 muestra una declaración hecha por un cliente como parte del proceso de señalización y negociación, de acuerdo con la presente invención.

La Figura 2 muestra una descripción SDP enviada por el servidor para indicar los atributos seleccionados al cliente, de acuerdo con la presente invención.

La Figura 3 muestra la descripción SDP en un mensaje RTSP enviado por el servidor.

La Figura 4 muestra una respuesta RTSP DESCRIBE enviada por el servidor.

La Figura 5 muestra una declaración hecha por el cliente como parte del proceso de señalización y de negociación, de acuerdo con otra modalidad de la presente invención.

La Figura 6 muestra la descripción SDP enviada por el servidor para indicar los atributos seleccionados al cliente, de acuerdo con la otra modalidad de la presente invención.

La Figura 7 muestra la descripción SDP en un mensaje RTSP enviado por el servidor.

La Figura 8 muestra una respuesta RTSP DESCRIBE enviada por el servidor.

La Figura 9 muestra una declaración hecha por el cliente como parte del proceso de señalización y negociación, de acuerdo con todavía otra modalidad de la presente invención.

La Figura 10 muestra la descripción SDP enviada por el servidor para indicar los atributos seleccionados al cliente, de acuerdo con la presente invención.

La Figura 11 muestra la descripción SDP en un mensaje RTSP enviado por el servidor.

La Figura 12 muestra una respuesta RTSP DESCRIBE enviada por el servidor.

La Figura 13 es un diagrama de flujo que ilustra el método de señalizar y negociar entre un cliente y un servidor con respecto a la adaptación de un proceso de suministro de datos, en donde el cliente inicia la negociación.

La Figura 14 es un diagrama de flujo que ilustra el método de señalizar y negociar en donde el servidor inicia la negociación.

Descripción Detallada de la Invención

El método de señalizar y negociar entre un cliente y un servidor en un servicio de flujo multimedia con respecto a la adaptación del proceso de suministro de datos, de acuerdo con la presente invención, puede llevarse a cabo por vía de un mecanismo de intercambio de capacidad o por vía de un protocolo de control de flujo multimedia. La adaptación del proceso de suministro de datos se hace en base de uno o más atributos de uno o más mecanismos o capacidades de

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adaptación, que son usados para determinar los procesos de adaptación en un Servicio de Flujo Multimedia.

Cuando la señalización y negociación se lleva a cabo por vía de un mecanismo de intercambio de capacidad, el procedimiento se describe como sigue:

- El cliente declara en su perfil de capacidad definido por un mecanismo de intercambio de capacidad los atributos de los mecanismos o capacidades de adaptación implementados por el cliente;**
- El servidor obtiene el perfil de capacidad;**
- A medida que el servidor conoce que mecanismos o capacidades de adaptación están implementadas por el cliente, el servidor selecciona un subconjunto de los atributos que no ponen conflicto con los procesos de adaptación. De acuerdo con el subconjunto seleccionado de atributos, el servidor mide la descripción de la sesión multimedia y declara la descripción de la sesión al cliente; y**
- Con base en la descripción de la sesión, el cliente que conoce la selección de la capacidad o el mecanismo de adaptación llevada a cabo por el servidor para la sesión de multimedia particular. El cliente acepta los mecanismos o capacidades de adaptación declaradas en la descripción de la sesión por defecto, porque la descripción declarada contiene un subconjunto de atributos o capacidades de mecanismo de adaptación declaradas por el cliente.**

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Cuando la señalización y negociación se lleva a cabo por medio de un protocolo de control de flujo de multimedia, el procedimiento es descrito como sigue:

- El cliente incluye los atributos del mecanismo o capacidad de adaptación implementados por el cliente en el protocolo de control de flujo multimedia definido por el control de la sesión de flujo;
- Con base en aquellos atributos, el servidor conoce los mecanismos o capacidades de adaptación que son implementados o requeridos por el cliente. El servidor selecciona un subconjunto de atributos que entran en conflicto con los procesos de adaptación y señala al cliente los atributos seleccionados o no seleccionados. Dependiendo de la fase actual de comunicación de control, el servidor puede calcular la descripción de la sesión multimedia de acuerdo con los atributos seleccionados y declarar la descripción de la sesión al cliente; y
- Con base en la respuesta del servidor, el cliente conoce que atributos son seleccionados por el servidor. El cliente acepta por defecto los mecanismos o capacidades de adaptación definidos por los atributos seleccionados por el servidor, porque los mecanismos o capacidades de adaptación seleccionados son un subconjunto de los mecanismos o capacidades de adaptación declarados por el cliente.

El método de señalización y negociación, de acuerdo con la presente invención, puede ser implementado en el servicio de flujo de multimedia con base en TS 26.234 o versiones posteriores. La implementación cubre la definición, señalización y negociación de los siguientes mecanismos:

- Un uso de AVPF en una sesión 3G PSS particular (ver, por ejemplo, IETF draft-ietf-avt-rtcp-feedback-04: "Perfil extendido de RTP para una Realimentación con base en RTCP (RTP/AVPF)", Ott et al., 2002, referida de aquí en adelante como *draft-avpf-04*);
- Un uso de Formato de Carga de Retransmisión RTP en una sesión 3G PSS particular (ver, por ejemplo, IETF draft-ietf-avt-rtp-retransmission-05: "Formato de Carga de Retransmisión RTP", Rey et al., 2002, referida de aquí en adelante como *draft-retransmission-05*); y
- Un uso de SPTP en una sesión 3G PSS particular (ver, por ejemplo, IETF draft-ietf-avt-srtp-05: "El Protocolo de Transporte en Tiempo Real Seguro", Baugher et al., 2002, referido de aquí en adelante como *draft-srtp-05*).

I. Uso de AVPF en una sesión 3G PSS particular

Si el AVPF, según se definió en *draft-avpf-04* está soportado por el cliente, y el cliente señala el soporte AVPF, entonces el servidor puede usar cualquier combinación de rasgos AVPF según se definió en *draft-avpf-04* en el proceso de adaptación. El cliente también puede señalar cada rasgo soportable de AVPF (por ejemplo, modo de realimentación inmediato, soporte de paquete RTCP temprano, etc.) separadamente, si hay un identificador del mecanismo bien definido para ese rasgo.

Dejemos que el atributo "AVPFSupport" sea definido en el vocabulario del Esquema RDF (Marco de Descripción de Recurso) para señalar el soporte de AVPF definido en *draft-avpf-04* para medios de audio y video.

Dejemos que el atributo "UnSupportedAdaptationSupport" sea definido en el vocabulario del Esquema RDF como un mecanismo o capacidad de adaptación, el cual está soportado por el cliente, pero no por el servidor.

Dejemos que el atributo "SupportedAdaptationSupport" sea definido en el vocabulario de Esquema RDF como un mecanismo o capacidad de adaptación, que también está soportado por el servidor.

Dejemos que "x-avpfsupport" sea un atributo bien definido SDP (Protocolo de Descripción de Sesión), el cual está incluido en la sección de medios de audio y video (o en el nivel de sesión para el uso en ambos tipos de medios) del SDP cuando el AVPF está soportado.

Dejemos que "x-unsupportedadaptationsupport" sea un atributo SDP bien definido, el cual está incluido en el SDP (sesión o nivel de medio) cuando es soportado.

Dejemos que "x-supportedadaptationsupport" sea un atributo SDP bien definido, el cual está incluido en el SDP (sesión o nivel de medio) cuando está soportado.

A. Señalizar y negociar por medio de un mecanismo de intercambio de capacidad posible:

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- El cliente envía una solicitud RTSP DESCRIBE al servidor con un apuntamiento URI para la información de capacidad del cliente que reside en un servidor de intercambio de capacidad.

- El servidor busca la declaración de capacidad del cliente en el servidor de Intercambio de capacidad. La declaración incluye una parte para las capacidades de flujo en el lado del cliente como se muestra en la Figura 1.

Las líneas en negrilla en la declaración representan las capacidades de soporte del mecanismo de adaptación del cliente. Debe notarse que cuando un valor de atributo es TRUE, el mecanismo o capacidad es soportado por el cliente. Inversamente, cuando el valor del atributo es FALSE, el mecanismo o capacidad no está soportado por el cliente. Por ejemplo, si el atributo **AVPFSupport** es TRUE, este declara que el cliente tiene el soporte AVPF para los componentes de medios de audio y video en una sesión particular.

- Viendo esta capacidad, el servidor calcula la descripción SDP que va a ser enviada al cliente incluyendo la capacidad AVPF y la capacidad **SupportedAdaptationSupport**. La descripción SDP está mostrada en la Figura 2. El servidor no incluye los atributos SDP con base en el **UnsupportedAdaptationSupport**, porque este no tiene soporte para ello. Las líneas en negrilla en la descripción SDP indican el uso del AVPF y el soporte para el **SupportedAdaptationSupport**.

- Al recibir esta descripción SDP, el cliente conoce que el AVPF será usado para el componente de video, pero no para el componente de audio. También es posible que el AVPF sea usado tanto para los componentes de medio de audio y video.

En tal caso, "a=x-avpfsupport" sería un atributo SDP de nivel de sesión. El cliente también entiende que **UnsupportedAdaptationSupport** no será usado y el mecanismo o capacidad **SupportedAdaptationSupport** será usado tanto para los medios de audio y video.

B. Señalizar y negociar vía un protocolo de control de flujo de multimedia posible:

En 3G PSS, el protocolo RTSP es usado para controlar la sesión de multimedia.

Dejemos que "x-avpfsupport" sea una etiqueta de la opción RTSP bien definida, la cual indica el soporte de AVPF en el cliente.

Dejemos que "x-unsupportedadaptationsupport" sea una etiqueta de opción RTSP bien definida, la cual es señalizada en el mensaje RTSP cuando es soportada por el cliente. Se asume que el mecanismo representado por esta etiqueta no está soportado por el servidor.

Dejemos que "x-supportedadaptationsupport" sea una etiqueta de opción RTSP bien definida, la cual está señalizada en el mensaje RTSP cuando es soportada por el cliente.

El cliente se presume que conoce el URL del RTSP para la sesión multimedia.

- El cliente envía una solicitud **DESCRIBE** con la selección de mecanismos o capacidades de adaptación preferidos:

Cliente->Server:

DESCRIBE rtsp://foo/twister RTSP/1.0

CSeq:1

Require:x-avpfsupport,x-unsupportedadaptationsupport,x-supportadaptationsupport

- El cliente usa el encabezamiento de la solicitud **RTSP Require** para señalar los *mecanismos o capacidades* soportadas.

- Para lograr que el servidor mida exitosamente el SDP de acuerdo con los mecanismos o capacidades soportados por el cliente, el cliente señala los mecanismos o capacidades soportados en una solicitud RTSP antes de o en el método RTSP DESCRIBE.

- El servidor verifica la solicitud RTSP y ve que esta pueda usar x-avpfsupport y x-unsupportedadaptationsupport, pero no la x-unsupportedadaptationsupport.

El servidor tiene dos posibles maneras para responder:

ALTERNATIVA 1:

- El servidor envía una Respuesta RTSP 551 "Option Not Supported", incluyendo los mecanismos no soportados o capacidades no soportadas en el cuerpo del mensaje:

Server->Client

RTSP/1.0 551 Option not supported

CSeq:1

Unsupported:x-unsupportedadaptationsupport

- El cliente emite otra solicitud DESCRIBE con solamente los mecanismos o capacidades soportados:

Client->Server

DESCRIBE rtsp://foo/twister RTSP/1.0

CSeq:2

Require:x-avpfsupport,x-unsupportedadaptationsupport

- El servidor responde con un mensaje RTSP 200 OK, que también contiene la descripción SDP como se muestra en la Figura 3.

ALTERNATIVA 2:

- El servidor envía una respuesta RTSP DESCRIBE, que contiene el mecanismo no soportado/la información de capacidad sin una respuesta de estado RTSP 551. La respuesta RTSP DESCRIBE es mostrada en la Figura 4.
- El servidor usa el encabezamiento de la respuesta RTSP Unsupported para señalar el mecanismo o los mecanismos o capacidades de adaptación no soportados que no son posibles de usar por la sesión particular, y usa los atributos SDP apropiados para señalar el uso de los mecanismos o capacidades de adaptación seleccionados.

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- Cuando el cliente recibe la respuesta DESCRIBE con la descripción SDP, este conoce que conjunto de mecanismos o capacidades de adaptación son seleccionados para uso en esta sesión en particular.

En el caso en que el cliente recibe la descripción SDP de otra fuente, por ejemplo por vía MMS, el cliente puede analizar la descripción SDP y encontrar el URL de la sesión RTSP. Entonces, este puede enviar una solicitud RTSP DESCRIBE para señalar y negociar los mecanismos o capacidades de adaptación. El cliente puede medir el conjunto de mecanismos o capacidades de adaptación por medio de analizar el MMS recuperado de la descripción SDP de antemano. Esto resuelve la confusión en el lado del servidor, porque el servidor no conoce exactamente el contenido de la descripción SDP en tal escenario de uso.

II. Uso del Formato de Carga de Retransmisión RTP en una sesión 3G PSS particular

Dejemos que el atributo "RtxSupport" sea definido en el vocabulario del Esquema RDF para señalar el uso del mecanismo de retransmisión RTP definido en la retransmisión de diseño para medios de audio y video. El soporte RTX es definido automáticamente en el soporte AVPF en el lado del cliente.

Dejemos que el atributo "UnsupportedAdaptationSupport" sea definido en el vocabulario de Esquema RDF como un mecanismo o capacidad de adaptación, el cual no está soportado por el servidor, pero si por el cliente.

Dejemos que el atributo "SupportedAdaptationSupport" sea definido en el vocabulario de Esquema RDF como un mecanismo o capacidad de adaptación, el cual está soportado por el servidor.

Dejemos que "x-rxsupport" sea un atributo SDP bien definido el cual está incluido en la sección de medios de audio y video (o en el nivel de sesión para uso en ambos tipos de medios) del SDP cuando el formato de carga de retransmisión RTP está soportado.

Dejemos que "x-unsupportedadaptationsupport" sea un atributo SDP bien definido el cual está incluido en el SDP (sesión o nivel de medios) cuando es soportado.

Dejemos que "x-supportedadaptationsupport" sea un atributo SDP bien definido el cual está incluido en el SDP (sesión o nivel de medios) cuando está soportado.

A. Señalización y Negociación por medio de un Mecanismo de Intercambio de Capacidad Posible

- El cliente envía una solicitud RTSP DESCRIBE al servidor con un apuntamiento URI para la información de capacidad del cliente que reside en un servidor de intercambio de capacidad.

- El servidor busca la declaración de capacidad del cliente en el servidor de intercambio de capacidad. La declaración incluye una parte para las capacidades de flujo en el lado del cliente, como se muestra en la Figura 5.

Las líneas en negrilla en la declaración representan las capacidades de soporte de mecanismos de adaptación del cliente. El **RtxSupport**, cuando es TRUE, declara que el cliente tiene el soporte del formato de carga de retransmisión RTP para los componentes de medios de audio y video en una sesión particular.

- Viendo esta capacidad, el servidor calcula la descripción SDP que va a ser enviada al cliente, incluyendo la capacidad de retransmisión RTP y la capacidad de **SupportedAdaptationSupport**. La descripción SDP es mostrada en la Figura 6. El servidor no incluye los atributos SDP con base en el **UnsupportedAdaptationSupport**, porque este no tiene soporte para ello. Las líneas en negrilla en la descripción SDP indican el uso del formato de carga de retransmisión RTP y el soporte para **SupportedAdaptationSupport**.

- Al recibir esta descripción SDP, el cliente conoce que la retransmisión RTP será usada para el componente de video, pero no para el componente de audio. Este también entiende que **UnsupportedAdaptationSupport** no será usado y el mecanismo o capacidad de **SupportedAdaptationSupport** será usado tanto para el medio de audio como de video.

B. Señalización y Negociación por medio de un Protocolo de Control de Flujo de Multimedia

En 3G PSS, el protocolo RTSP es usado para controlar la sesión de multimedia

Dejemos que "x-rtxsupport" sea una etiqueta de la opción RTSP bien definida, la cual indica el formato de carga de retransmisión RTP es soportado por el cliente.

Dejemos que "x-unsupportedadaptationsupport" sea una etiqueta de opción RTSP bien definida, la cual es señalizada en el mensaje RTSP cuando es soportada por el cliente. Se asume que el mecanismo o capacidad representado por esta etiqueta no está soportado por el servidor.

Dejemos que "x-supportedadaptationsupport" sea una etiqueta de opción RTSP bien definida, la cual está señalizada en el mensaje RTSP cuando es soportada por el cliente.

El cliente se presume que conoce el URL del RTSP para la sesión multimedia.

- El cliente envía una solicitud DESCRIBE con la selección de mecanismos o capacidades de adaptación preferidos:

Cliente->Server:

DESCRIBE rtsp://foo/twister RTSP/1.0

CSeq:1

**Require:x-rtxsupport,x-unsupportedadaptationsupport,x-
supportadaptationsupport**

- El cliente usa el encabezamiento de la solicitud RTSP Require para señalar los *mecanismos o capacidades de adaptación* soportadas.

- Para lograr que el servidor mida exitosamente el SDP de acuerdo con los mecanismos o capacidades de adaptación soportados por el cliente, el cliente señala los mecanismos o capacidades de adaptación soportados en una solicitud RTSP antes de o en el método RTSP DESCRIBE.

- El servidor verifica la solicitud RTSP y ve que esta pueda usar x-rtpsupport y x-supportedadaptationsupport, pero no la x-unsupportedadaptationsupport.

El servidor tiene dos posibles maneras para responder:

ALTERNATIVA 1:

- El servidor envía una Respuesta RTSP 551 "Option Not Supported", incluyendo los mecanismos o capacidades no soportadas en el cuerpo del mensaje:

Server->Client

RTSP/1.0 551 Option not supported

CSeq:1

Unsupported:x-unsupportedadaptationsupport

- El cliente emite otra solicitud DESCRIBE con solamente los mecanismos o capacidades soportados:

Client->Server

DESCRIBE rtsp://foo/twister RTSP/1.0

CSeq:2

Require:x-rtpsupport,x-supportedadaptationsupport

- El servidor responde con un mensaje RTSP 200 OK, que también contiene la descripción SDP como se muestra en la Figura 7.

ALTERNATIVA 2:

- El servidor envía una respuesta RTSP DESCRIBE, que contiene información de mecanismo/capacidad no soportada sin una respuesta de estado RTSP 551. La respuesta RTSP DESCRIBE es mostrada en la Figura 8.
- El servidor usa el encabezamiento de la respuesta RTSP Unsupported para señalar el mecanismo no soportado o los mecanismos o capacidades de adaptación que no son posibles de usar por la sesión particular, y usa los atributos SDP apropiados para señalar el uso de los mecanismos o capacidades de adaptación seleccionados.
- Cuando el cliente recibe la respuesta DESCRIBE con la descripción SDP, este conoce que conjunto de mecanismos o capacidades de adaptación son seleccionados para uso en esta sesión en particular.

En el caso en que el cliente recibe la descripción SDP de otra fuente, por ejemplo por vía MMS, el cliente puede analizar la descripción SDP y encontrar el URL de la sesión RTSP. Entonces, este puede enviar una solicitud RTSP DESCRIBE para señalar y negociar los mecanismos o capacidades de adaptación. El cliente puede medir el conjunto de mecanismos o capacidades de adaptación por medio de analizar el MMS recuperado de la descripción SDP de antemano. Esto resuelve la confusión en el lado del servidor, porque el servidor no conoce exactamente el contenido de la descripción SDP en tal escenario de uso.

III. Uso de SRTP en una sesión 3G PSS particular

Dejemos que el atributo "SRTPSupport" sea definido en el vocabulario del Esquema RDF para señalar el soporte del SRTP definido en *draft-srtp-05* para el medio de audio y video.

Dejemos que el atributo "UnsupportedAdaptationSupport" sea definido en el vocabulario de Esquema RDF como un mecanismo o capacidad de adaptación, el cual está soportado por el cliente, pero no por el servidor.

Dejemos que el atributo "SupportedAdaptationSupport" sea definido en el vocabulario de Esquema RDF como un mecanismo o capacidad de adaptación, el cual está soportado por el servidor.

Dejemos que "x-srtpsupport" sea un atributo SDP bien definido el cual está incluido en la sección de medios de audio y video (o en el nivel de sesión para uso en ambos tipos de medios) del SDP cuando el SRTP está soportado.

Dejemos que "x-unsupportedadaptationsupport" sea un atributo SDP bien definido el cual está incluido en el SDP (sesión o nivel de medios) cuando es soportado.

Dejemos que "x-supportedadaptationsupport" sea un atributo SDP bien definido el cual está incluido en el SDP (sesión o nivel de medios) cuando está soportado.

A. Señalización y Negociación por medio de un Mecanismo de Intercambio de Capacidad Posible

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- El cliente envía una solicitud RTSP DESCRIBE al servidor con un apuntamiento URI para la información de capacidad del cliente que reside en un servidor de intercambio de capacidad.

- El servidor busca la declaración de capacidad del cliente en el servidor de intercambio de capacidad. La declaración incluye una parte para las capacidades de flujo en el lado del cliente, como se muestra en la Figura 9. Las líneas en negrilla en la declaración representan las capacidades de soporte de mecanismos de adaptación del cliente. El **SRTPSupport**, cuando es TRUE, declara que el cliente tiene el soporte SRTP para los componentes de medios de audio y video en una sesión particular.

- Viendo esta capacidad, el servidor construye la descripción SDP que va a ser enviada al cliente, incluyendo la capacidad SRTP y la capacidad de **SupportedAdaptationSupport**. La descripción SDP es mostrada en la Figura 10. El servidor no incluye los atributos SDP con base en el **UnsupportedAdaptationSupport**, porque este no tiene soporte para ello.

Las líneas en negrilla en la descripción SDP indican el uso del SRTP y el soporte para **SupportedAdaptationSupport**.

- Al recibir esta descripción SDP, el cliente conoce que el SRTP será usado para los componentes de video y audio. Este también entiende que **UnsupportedAdaptationSupport** no será usado y el mecanismo o capacidad de **SupportedAdaptationSupport** será usado tanto para el medio de audio como de video.

B. Señalización y Negociación por medio de un Protocolo de Control de Flujo de Multimedia

En 3G PSS, el protocolo RTSP es usado para controlar la sesión de multimedia

Dejemos que "x-srtpsupport" sea una etiqueta de la opción RTSP bien definida, la cual indica el soporte SRTP en el cliente.

Dejemos que "x-unsupportedadaptationsupport" sea una etiqueta de opción RTSP bien definida, la cual es señalizada en el mensaje RTSP cuando es soportada por el cliente. Se asume que el mecanismo o capacidad representada por esta etiqueta no está soportado por el servidor.

Dejemos que "x-supportedadaptationsupport" sea una etiqueta de opción RTSP bien definida, la cual está señalizada en el mensaje RTSP cuando es soportada por el cliente.

El cliente se presume que conoce el URL del RTSP para la sesión multimedia.

- El cliente envía una solicitud DESCRIBE con la selección de mecanismos o capacidades de adaptación preferidos:

Cliente->Server:

DESCRIBE rtsp://foo/twister RTSP/1.0

CSeq:1

Require:x-srtpsupport,x-unsupportedadaptationsupport,x-
supportadaptationsupport

- El cliente usa el encabezamiento de la solicitud RTSP Require para señalar los *mecanismos o capacidades de adaptación* soportadas.

- Para lograr que el servidor construya exitosamente el SDP de acuerdo con los mecanismos o capacidades soportados por el cliente, el cliente señala los mecanismos o capacidades soportados en una solicitud RTSP antes de o en el método RTSP DESCRIBE.

- El servidor verifica la solicitud RTSP y ve que esta pueda usar x-srtpsupport y x-supportedadaptationsupport, pero no la x-unsupportedadaptationsupport.

El servidor tiene dos posibles maneras para responder:

ALTERNATIVA 1:

- El servidor envía una Respuesta RTSP 551 "Option Not Supported", incluyendo los mecanismos o capacidades no soportadas en el cuerpo del mensaje:

Server->Client

RTSP/1.0 551 Option not supported

CSeq:1

Unsupported:x-unsupportedadaptationsupport

- El cliente emite otra solicitud DESCRIBE con solamente los mecanismos o capacidades soportados:

Client->Server

DESCRIBE rtsp://foo/twister RTSP/1.0

CSeq:2

Require:x-rtpxsupport,x-supportedadaptationsupport

- El servidor responde con un mensaje RTSP 200 OK, que también contiene la descripción SDP como se muestra en la Figura 11.

ALTERNATIVA 2:

- El servidor envía una respuesta RTSP DESCRIBE, que contiene información de mecanismo/capacidad no soportada sin una respuesta de estado RTSP 551. La respuesta RTSP DESCRIBE es mostrada en la Figura 12.
- El servidor usa el encabezamiento de la respuesta RTSP Unsupported para señalar el mecanismo no soportado o los mecanismos o capacidades de adaptación que no son posibles de usar por la sesión particular, y usa los atributos SDP apropiados para señalar el uso de los mecanismos o capacidades de adaptación seleccionados.
- Cuando el cliente recibe la respuesta DESCRIBE con la descripción SDP, este conoce que conjunto de mecanismos o capacidades de adaptación son seleccionados para uso en esta sesión en particular.

En el caso en que el cliente recibe la descripción SDP de otra fuente, por ejemplo por vía MMS, el cliente puede analizar la descripción SDP y encontrar el URL de la sesión RTSP. Entonces, este puede enviar una solicitud RTSP DESCRIBE para

señalizar y negociar los mecanismos o capacidades de adaptación. El cliente puede construir el conjunto de mecanismos o capacidades de adaptación por medio de analizar el MMS recuperado de la descripción SDP de antemano. Esto resuelve la confusión en el lado del servidor, porque el servidor no conoce exactamente el contenido de la descripción SDP en tal escenario de uso.

En resumen, la presente invención suministra un método para señalar y negociar entre cliente y un servidor en un sistema de servicio de flujo multimedia con respecto a la adaptación de un proceso de suministro de datos. El procedimiento para señalar y negociar puede ser ilustrado por la Figura 13. Como se muestra en el diagrama de flujo en la Figura 13, para poder negociar un mecanismo o capacidad de adaptación, el cliente señala al servidor una pluralidad de atributos al cliente en la etapa 110. Estos atributos son aquellos de los mecanismos o capacidades de adaptación implementados por el cliente. Los atributos son incluidos sea en el perfil de capacidad del cliente definido para un mecanismo de intercambio de capacidad, o en el protocolo de control de flujo de multimedia definido para el control de la sesión de flujo. En la etapa 120, el servidor obtiene los atributos del perfil de capacidad o del protocolo de control de flujo de multimedia, y selecciona un subconjunto de estos atributos. Con base en los atributos seleccionados, el servidor construye una descripción de sesión de multimedia y envía la descripción al cliente en la etapa 130. Con base en la descripción de la sesión, el cliente conoce los atributos seleccionados por el servidor. En la etapa 140, el cliente acepta los mecanismos o capacidades de adaptación definidos por los atributos seleccionados por defecto. El método de señalización y negociación, de acuerdo con la presente invención, puede ser implementado en un uso AVPT, un uso de Formato de Carga de Retransmisión RTP o un uso SPTP en una sesión 3G PSS particular.

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Debería notarse que el método de señalización y negociación, de acuerdo con la presente invención, puede también ser iniciado por el servidor, como se ilustró en el diagrama de flujo mostrado en la Figura 14. Como se muestra, el servidor indica al cliente, en la etapa 210, el mecanismo o capacidad de adaptación sin la iniciación del cliente. En este caso, no hay indicación del mecanismo o capacidad de adaptación en el lado del cliente, sino del lado del servidor. Después de obtener la indicación del servidor, el cliente usa un atributo bien definido en la respuesta RSTP para indicar, en la etapa 220, su soporte para esa capacidad al servidor.

Así, aunque la invención ha sido descrita con respecto a una modalidad preferida de la misma, deberá entenderse por aquellos versados en la técnica que lo anterior y diversos otros cambios, omisiones o desviaciones en la forma y detalle de la misma pueden ser hechos sin salirse del alcance de esta invención.

REIVINDICACIONES

Lo que se reivindica es:

- 1. Un método para señalar y negociar entre un cliente y un servidor en un servicio de flujo de multimedia, en donde una pluralidad de mecanismos o capacidades de adaptación para uso en el servicio para el suministro de datos están soportados por el cliente, cada mecanismo o capacidad de adaptación tiene un atributo, dicho método está caracterizado por:**
 - el cliente suministra información indicativa de los atributos que definen los mecanismos o capacidades de adaptación que son soportados por el cliente;**
 - el servidor selecciona uno o más de los atributos con base en la información suministrada; y**
 - el servidor suministra información adicional indicativa de los atributos seleccionados de modo que le permite al cliente conocer el uno o más mecanismos o capacidades de adaptación definidos por el uno o más atributos seleccionados por el servidor.**
- 2. El método de la reivindicación 1, caracterizado en que el cliente suministra la información por vía de un mecanismo de intercambio de capacidad.**

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3. El método de la reivindicación 1, caracterizado en que el cliente suministra la Información por vía de un protocolo de control de flujo de multimedia.
4. El método de la reivindicación 1, caracterizado adicionalmente por
 - el servidor suministra indicación de una capacidad al cliente antes de que el cliente suministre información.
5. Un método para señalización y negociación entre dos partes que incluye un cliente y un servidor en un servicio de flujo de multimedia, en donde una pluralidad de mecanismos o capacidades de adaptación para uso en el servidor para el suministro de datos son soportados por el cliente, cada mecanismo o capacidad de adaptación tiene un atributo, dicho método se caracteriza por:
 - suministrar por una de las dos partes a la otra de las dos partes información indicativa de uno o más mecanismos o capacidades de adaptación; y
 - dirigir un mensaje desde dicha otra parte a dicha parte, en respuesta a la información, reconociendo el soporte de dicho uno o más mecanismos o capacidades de adaptación.
6. El método de la reivindicación 5, caracterizado en que dicha una parte es el servidor y la otra parte es el cliente, y que

- el cliente reconoce el soporte por medio de usar los atributos que define dicho uno o más mecanismos o capacidades de adaptación en el mensaje de respuesta.

7. El método de la reivindicación 5, caracterizado en que dicha una parte es el cliente y la otra parte es el servidor, y que

- el cliente suministra una pluralidad de atributos; y
- el servidor selecciona uno o más de los atributos suministrados con base en la información suministrada para el reconocimiento del soporte.

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MÉTODO PARA SEÑALIZAR LA ADAPTACIÓN DE CALIDAD DE FLUJO Y LOS MECANISMOS DE CONTROL EN UN FLUJO DE MULTIMEDIA

Resumen:

Un método para señalización y negociación entre un cliente y un servidor en un servicio de flujo de multimedia con respecto a la adaptación del proceso de suministro de los datos. Para poder asegurar que el cliente soporta los mecanismos o capacidades de adaptación que van a ser usadas en este suministro de datos, una de las partes suministra información que indica el mecanismo o capacidad de adaptación que este soporta a la otra parte. Luego de recibir la información, la otra parte usa una respuesta RTSP bien definida para indicar el soporte de ese mecanismo o capacidad. Cualquiera el servidor o el cliente puede iniciar la negociación. La implementación de la señalización y la negociación cubre un uso AVPF, un uso del Formato de Carga de Retransmisión RTP, y un uso SPTP en una sesión 3G PSS particular.

```

<ccpp:component>
  <rdf:Description ID="Streaming">
    <rdf:type rdf:resource="http://www.3gpp.org/profiles/PSS/ccppschem-
PSS6#Streaming" />
    <pss6:AudioChannels>Stereo</pss6:AudioChannels>
    <pss6:VideoPreDecoderBufferSize>30720</pss6:VideoPreDecoderBufferSize>
    <pss6:VideoInitialPostDecoderBufferingPeriod>0</pss6:VideoInitialPostDecoderBuf
feringPeriod>
    <pss6:VideoDecodingByteRate>16000</pss6:VideoDecodingByteRate>
    <pss6:RenderingScreenSize>73x50</pss6:RenderingScreenSize>
    <pss6:AVPFSupport>TRUE</pss6:AVPFSupport>
    <pss6:UnsupportedAdaptationSupport>TRUE</pss6:UnsupportedAdaptationSuppo
rt>
    <pss6:SupportedAdaptationSupport>TRUE</pss6:SupportedAdaptationSupp
rt>
    <pss6:PssAccept>
      <rdf:Bag>
        <rdf:li>audio/AMR-WB;octet-alignment</rdf:li>
        <rdf:li>video/MP4V-ES</rdf:li>
      </rdf:Bag>
    </pss6:PssAccept>
    <pss6:PssAccept-Subset>
      <rdf:Bag>
        <rdf:li>JPEG-PSS</rdf:li>
      </rdf:Bag>
    </pss6:PssAccept-Subset>
    <pss6:PssVersion>3GPP-R6</pss6:PssVersion>
    <pss6:RenderingScreenSize>70x40</pss6:RenderingScreenSize>
    <pss6:SmilBaseSet>SMIL-3GPP-R4</pss6:SmilBaseSet>
    <pss6:SmilModules>
      <rdf:Bag>
        <rdf:li>BasicTransitions</rdf:li>
        <rdf:li>MultiArcTiming</rdf:li>
      </rdf:Bag>
    </pss6:SmilModules>
  </rdf:Description>
</ccpp:component>
...

```

FIG. 1

```
v=0
o=alice 3203093520 3203093520 IN IP4 host.example.com
s=Adaptation support example
i=Example of Unicast SDP file
u=http://www.infoserver.com/ae600
e=ghost@mailserver.com
t=0 0
a=range: npt=0-300
a=x-supportedadaptationsupport
m=audio 0 RTP/AVP 96
b=AS:5
c=IN IP4 0.0.0.0
a=rtpmap:96 AMR-NB/8000
m=video 0 RTP/AVPF 98
b=AS:64
c=IN IP4 0.0.0.0
a=rtpmap:98 H263-2000/90000
a=fmtp:98 profile=3;level=10
a=x-avpfesupport
a=rtcp-fb:* nack
a=rtcp-fb:98 nack rpsi
```

FIG. 2

Server->Client

RTSP/1.0 200 OK

CSeq: 2

Content-Type: application/sdp

Content-Length: 184

v=0

o=alice 3203093520 3203093520 IN IP4 host.example.com

s=Adeptation support example

l=Example of Unicast SDP file

u=http://www.infoserver.com/ee800

e=ghost@mailserver.com

t=0 0

a=range: npt=0-300

a=x-supportedadaptationssupport

m=audio 0 RTP/AVP 98

b=AS:5

c=IN IP4 0.0.0.0

a=rtpmap:98 AMR-NB/8000

m=video 0 RTP/AVPF 98

b=AS:84

c=IN IP4 0.0.0.0

a=rtpmap:98 H263-2000/90000

a=fmtp:98 profile=3;level=10

a=x-avpfsupport

a=rtcp-fb:* nack

a=rtcp-fb:98 nack rpsi

FIG. 3

Server->Client

RTSP/1.0 200 OK

CSeq: 1

Unsupported: x-unsupportedadaptationsupport

Content-Type: application/sdp

Content-Length: 164

v=0

o=slice 3203093520 3203093520 IN IP4 host.example.com

s=Adaptation support example

i=Example of Unicast SDP file

u=http://www.infoserver.com/ae600

e=ghost@mailserver.com

t=0 0

a=range: npt=0-300

a=x-supportedadaptationsupport

m=audio 0 RTP/AVP 96

b=AS:5

c=IN IP4 0.0.0.0

a=rtpmap:96 AMR-NB/8000

m=video 0 RTP/AVPF 98

b=AS:64

c=IN IP4 0.0.0.0

a=rtpmap:98 H263-2000/90000

a=fmtp:98 profile=3;level=10

a=x-avpfsupport

a=rtp-fb:* nack

a=rtp-fb:98 nack rpl

FIG. 4

...

```

<ccpp:component>
  <rdf:Description ID="Streaming">
    <rdf:type rdf:resource="http://www.3gpp.org/profiles/PSS/ccppschem-
PSS6#Streaming" />
    <pss6:AudioChannels>Stereo</pss6:AudioChannels>
    <pss6:VideoPreDecoderBufferSize>30720</pss6:VideoPreDecoderBufferSize>
    <pss6:VideoInitialPostDecoderBufferingPeriod>0</pss6:VideoInitialPostDecoderBuf
feringPeriod>
    <pss6:VideoDecodingByteRate>18000</pss6:VideoDecodingByteRate>
    <pss6:RenderingScreenSize>73x50</pss6:RenderingScreenSize>
    <pss6:RtxSupport>TRUE</pss6:RtxSupport>
    <pss6:UnsupportedAdaptationSupport>TRUE</pss6:UnsupportedAdaptation
Support>
    <pss6:SupportedAdaptationSupport>TRUE</pss6:SupportedAdaptationSupp
rt>
    <pss6:PssAccept>
      <rdf:Bag>
        <rdf:li>audio/AMR-WB;octet-alignment</rdf:li>
        <rdf:li>video/MP4V-ES</rdf:li>
      </rdf:Bag>
    </pss6:PssAccept>
    <pss6:PssAccept-Subset>
      <rdf:Bag>
        <rdf:li>JPEG-PSS</rdf:li>
      </rdf:Bag>
    </pss6:PssAccept-Subset>
    <pss6:PssVersion>3GPP-R6</pss6:PssVersion>
    <pss6:RenderingScreenSize>70x40</pss6:RenderingScreenSize>
    <pss6:SmilBaseSet>SMIL-3GPP-R4</pss6:SmilBaseSet>
    <pss6:SmilModules>
      <rdf:Bag>
        <rdf:li>BasicTransitions</rdf:li>
        <rdf:li>MultiArcTiming</rdf:li>
      </rdf:Bag>
    </pss6:SmilModules>
  </rdf:Description>
</ccpp:component>

```

...

FIG. 5

```
v=0
o=alice 3203093520 3203093520 IN IP4 host.example.com
s=Adaptation support example
t=Example of Unicast SDP file
u=http://www.infoserver.com/ae600
e=ghost@mailserver.com
t=0 0
a=range: npt=0-300
a=x-supportedadaptation-support
m=audio 0 RTP/AVP 96
b=AS:5
c=IN IP4 0.0.0.0
a=rtpmap:96 AMR-NB/8000
m=video 0 RTP/AVPF 98 99
b=AS:64
c=IN IP4 0.0.0.0
a=rtpmap:98 H263-2000/90000
a=fmtp:98 profile=3;level=10
a=x-rbsupport
a=rtcp-fb:* nack
a=rtcp-fb:98 nack rpsi
a=rtpmap:99 rtx/90000
a=fmtp:99 apt=96;rtx-time=3000
```

FIG. 6

```

v=0
o=alice 3203093520 3203093520 IN IP4 hostExample.com
s=Adaptation support example
t=Example of Unicast SDP file
u=http://www.infoServer.com/as600
e=ghost@mailServer.com
t=0 0
a=range: npt=0-300
a=x-supportedadaptationSupport
m=audio 0 RTP/AVP 98
b=AS:5
c=IN IP4 0.0.0.0
a=rtpmap:98 AMR-NB/8000
m=video 0 RTP/AVPF 98 99
b=AS:64
c=IN IP4 0.0.0.0
a=rtpmap:98 H263-2000/90000
a=fmtp:98 profile=3;level=10
a=x-rtxSupport
a=rtcp-fb:* nack
a=rtcp-fb:98 nack rpsi
a=rtpmap:99 rtx/90000
a=fmtp:99 apt=98;rtx-time=3000

```

FIG. 7

Server->Client

RTSP/1.0 200 OK

CSeq: 1

Unsupported: x-unsupportedadaptationsupport

Content-Type: application/sdp

Content-Length: 164

v=0

o=alice 3203093520 3203093520 IN IP4 host.example.com

s=Adaptation support example

f=Example of Unicast SDP file

u=http://www.infoserver.com/ae600

e=ghost@mailserver.com

t=0 0

a=range: npt=0-300

a=x-unsupportedadaptationsupport

m=audio 0 RTP/AVP 96

b=AS:5

c=IN IP4 0.0.0.0

a=rtpmap:96 AMR-NB/8000

m=video 0 RTP/AVPF 98 99

b=AS:64

c=IN IP4 0.0.0.0

a=rtpmap:98 H263-2000/90000

a=fmtp:98 profile=3;level=10

a=x-rbcsupport

a=rtcp-fb:* nack

a=rtcp-fb:98 nack rpsi

a=rtpmap:99 rtx/90000

a=fmtp:99 apt=98;rtx-time=3000

FIG. 8

```

...
<ccpp:component>
  <rdf:Description ID="Streaming">
    <rdf:type rdf:resource="http://www.3gpp.org/profiles/PSS/ccppschem-
PSS6#Streaming" />
    <pss6:AudioChannels>Stereo</pss6:AudioChannels>
    <pss6:VideoPreDecoderBufferSize>30720</pss6:VideoPreDecoderBufferSize>
    <pss6:VideoInitialPostDecoderBufferingPeriod>0</pss6:VideoInitialPostDecoderBufferi
ngPeriod>
    <pss6:VideoDecodingByteRate>16000</pss6:VideoDecodingByteRate>
    <pss6:RenderingScreenSize>73x50</pss6:RenderingScreenSize>
    <pss6:SRTPSupport>TRUE</pss6:SRTPSupport>
    <pss6:UnsupportedAdaptationSupport>TRUE</pss6:UnsupportedAdaptationSup
port>
    <pss6:SupportedAdaptationSupport>TRUE</pss6:SupportedAdaptationSupport>
    <pss6:PssAccept>
      <rdf:Bag>
        <rdf:li>audio/AMR-WB;octet-alignment</rdf:li>
        <rdf:li>video/MP4V-ES</rdf:li>
      </rdf:Bag>
    </pss6:PssAccept>
    <pss6:PssAccept-Subset>
      <rdf:Bag>
        <rdf:li>JPEG-PSS</rdf:li>
      </rdf:Bag>
    </pss6:PssAccept-Subset>
    <pss6:PssVersion>3GPP-R6</pss6:PssVersion>
    <pss6:RenderingScreenSize>70x40</pss6:RenderingScreenSize>
    <pss6:SmilBaseSet>SMIL-3GPP-R4</pss6:SmilBaseSet>
    <pss6:SmilModules>
      <rdf:Bag>
        <rdf:li>BasicTransitions</rdf:li>
        <rdf:li>MultiArcTiming</rdf:li>
      </rdf:Bag>
    </pss6:SmilModules>
  </rdf:Description>
</ccpp:component>
...

```

FIG. 9

v=0
 o=alice 3203093520 3203093520 IN IP4 host.example.com
 s=Adaptation support example
 t=Example of Unicast SDP file
 u=http://www.infoserver.com/ae600
 e=ghost@mailserver.com
 t=0 0
 a=range: npt=0-300
 a= x-supportedadaptationsupport
 a= x-rtpsupport
 <...Relevant audio and video media SDP declarations as defined in draft-srtsp-05>

FIG. 10

Server->Client

RTSP/1.0 200 OK
 CSeq: 2
 Content-Type: application/sdp
 Content-Length: 164

v=0
 o=alice 3203093520 3203093520 IN IP4 host.example.com
 s=Adaptation support example
 t=Example of Unicast SDP file
 u=http://www.infoserver.com/ae600
 e=ghost@mailserver.com
 t=0 0
 a=range: npt=0-300
 a= x-supportedadaptationsupport
 a= x-rtpsupport
 <...Relevant audio and video media SDP declarations as defined in draft-srtsp-

05>

FIG. 11

Server->Client
RTSP/1.0 200 OK
CSeq: 1
Unsupported: x-unsupportedadaptationsupport
Content-Type: application/sdp
Content-Length: 164

v=0
o=alice 3203093520 3203093520 IN IP4 host.example.com
s=Adaptation support example
t=Example of Unicast SDP file
u=http://www.infoserver.com/aa000
e=ghost@mediaserver.com
c=0 0
a=range: npt=0-300
a=x-unsupportedadaptationsupport
a=x-rtpsupport
<...Relevant audio and video media SDP declarations as defined in draft-rtsp-05>

FIG. 12

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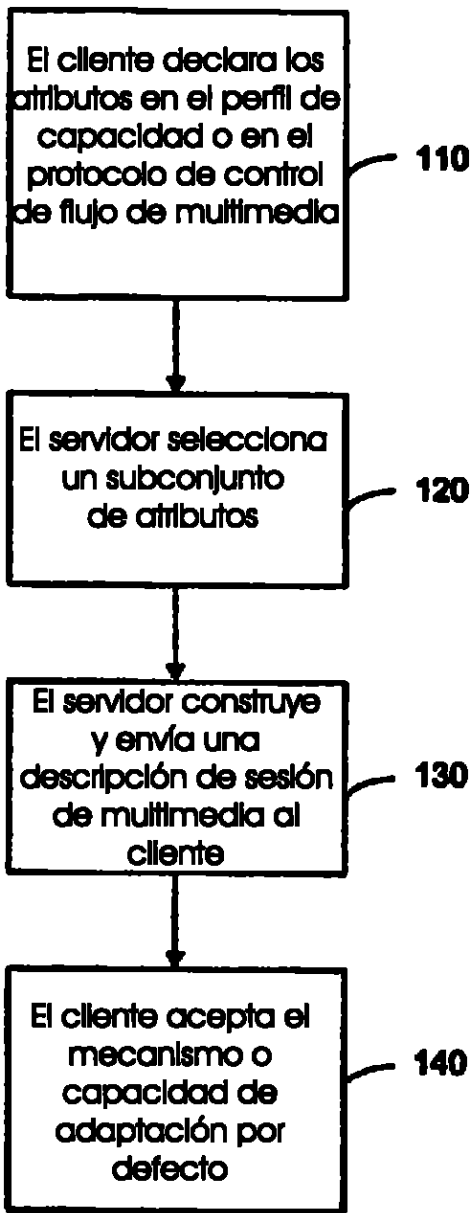


Figura 13

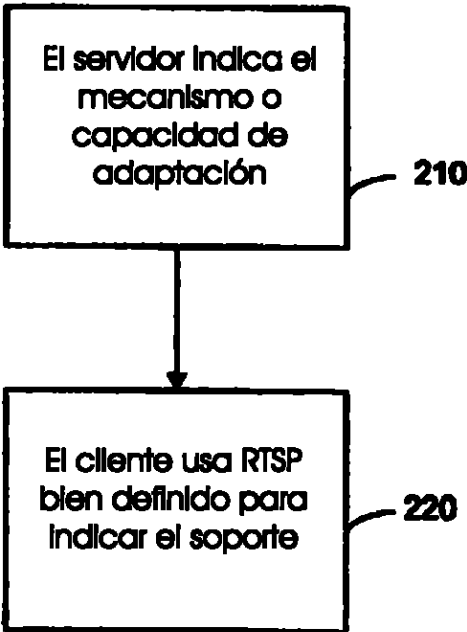


Figura 14

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

48

In Re Application of: Aksu et al. : Attorney Docket No. 944-001.103-5-1

International Application No.: PCT/IB2004/000374

Filed: February 13, 2004 : Authorized Officer: Bunjob Jaroenhonwanit

For: METHOD FOR SIGNALING STREAMING QUALITY ADAPTATION AND
CONTROL MECHANISMS IN MULTIMEDIA STREAMING

Mail Stop PCT, Attn: IPEA/US
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

RESPONSE TO WRITTEN OPINION

Sir:

This responds to the Written Opinion, mailed March 24, 2005.

I hereby certify that this correspondence is being
deposited with the United States Postal Service
"Express Mail Post Office to Addressee" service
under 37 C.F.R. 1.10, Express Mail Label No.
BV562515778US, on the date indicated below
and is addressed to Mail Stop PCT, Commissioner
for Patents, P.O. Box 1450, Alexandria, VA
22313-1450.

Signed CAS 6-24-05

Cathy Sturmer

Date

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REMARKS

In the patent application, claims 1-7 are pending. In the written opinion, all pending claims are considered as lacking an inventive step over *Taylor* (U.S. Patent Application No. 2002/0142769 A1).

At section 2, the Examiner states that *Taylor* discloses a method for providing services over networks, wherein an implementation script file is used for declaring capacity of the network devices (Figure 5, paragraphs 24, 50-51).

It is respectfully submitted that *Taylor* discloses a method of communications between a PDA and a peer via a wireless infrared link. At paragraph 24, *Taylor* discloses establishing one or more parameters governing data exchange between devices via the exchange of XML documents (see Figures 5 and 6). The parameters include capacity parameters such as maximum baud rate, and cache size.

The claimed invention, however, is concerned with providing information from a client to a server, the information indicative of attributes defining capabilities of a data delivery process.

In that respect, the claimed invention is distinguishable over the cited Taylor reference.

Respectfully submitted,

Signed KQL 6-24-05

Date: _____

Kenneth Q. Lao
Attorney for the Applicant
Registration No. 40,061

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Facsimile: (203) 261-5676
USPTO Customer No. 004955

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference 9441.103-5-1	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/JP04/K0374	International filing date (day/month/year) 13 February 2004 (13.02.2004)	(Earliest) Priority Date (day/month/year) 13 February 2003 (13.02.2003)
Applicant NOKIA CORPORATION		

This international search report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This international search report consists of a total of 2 sheets.



It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the Report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.



The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. ☐

With regard to any nucleotide and/or amino acid sequence disclosed in the international application, see Box No. 1.

2. ☐ Certain claims were found unsearchable (See Box No. II)

3. ☐ Unity of invention is lacking (See Box No. III)

4. With regard to the title,



the text is approved as submitted by the applicant.



the text has been established by this Authority to read as follows:

5. With regard to the abstract,



the text is approved as submitted by the applicant.



the text has been established, according to Rule 36.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regard to the drawings,

- a. the figure of the drawings to be published with the abstract is Figure No. 1



as suggested by the applicant.



as selected by this Authority, because the applicant failed to suggest a figure.



as selected by this Authority, because this figure better characterizes the invention.

- b. ☐

none of the figures is to be published with the abstract.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/IB04/00374

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A. CLASSIFICATION OF SUBJECT MATTER IPC(7) : G06F 15/16 US CL : 709/228 According to International Patent Classification (IPC) or to both national classification and IPC:		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) U.S. : 709/228, 229 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched IBM TDB Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) DERWENT		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 20020142769 A1 (TAYLOR) (3 October 2002 (10.10.2002), Figures 1, 4-6; paragraph 24, 50-51.	1-7
☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.		
* Special categories of cited documents:		
"A" documents defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principles or theory underlying the invention	
"U" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	
"L" documents which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combinations being obvious to a person skilled in the art	
"O" documents referring to an oral disclosure, use, exhibition or other means	"Z" document member of the same patent family	
"P" documents published prior to the international filing date but later than the priority date claimed		
Date of the actual completion of the international search 03 March 2005 (03.03.2005)		Date of mailing of the international search report 24 MAR 2005
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230		Authorized officer <i>for</i> Michelle L. ... Dhruv J. Jadhav Telephone No. (703) 305-3800

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

To:
FRANCIS J. MAGUIRE
WARE, FRESSOLA, VAN DER SLUYS & ADOLPHSON
LLP
755 MAIN STREET, PO BOX 224
MONROE, CT 06468

PCT

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing (day/month/year) 24 MAR 2005	
Applicant's or agent's file reference 9441.103-S-1	FOR FURTHER ACTION See paragraphs 1 and 4 below
International application No. PCT/IB04/00374	International filing date (day/month/year) 13 February 2004 (13.02.2004)
Applicant NOKIA CORPORATION	

1. ☒ The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the international application (see Rule 46):

When? The time limit for filing such amendments is normally two months from the date of transmittal of the international search report.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
1211 Geneva 20, Switzerland, Facsimile No.: +41 22 740 14 15

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Reminders

Shortly after the expiration of 18 months from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within 19 months from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later); otherwise, the applicant must, within 30 months from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of 30 months (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the PCT Applicant's Guide, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the ISA/US
Mail Stop PCT, Attn: ISA/US
Commissioner for Patents
P.O. Box 1430
Alexandria, Virginia 22311-1430
Facsimile No. (703) 305-3230

Authorizing officer *Michelle L. Egan*
Hanjun Jarambahevanani
Telephone No. (703) 305-3400

Form PCT/ISA/220 (January 2004)

(See notes on accompanying sheet)

RECEIVED
WARE, FRESSOLA, VAN DER SLUYS
& ADOLPHSON

MAR 29 2005

FILE 944-IND-103-S-1
ANSD. KPL

DOCKETED

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
FRANCIS J. MAGUIRE
WARE, FRESSOIA, VAN DER SLUYS & ADOLPHSON
LLP
755 MAIN STREET, PO BOX 224
MONROE, CT 06468

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

93

Applicant's or agent's file reference 9441.103-5-1		Date of mailing (day/month/year) 24 MAR 2005
International application No. PCT/IB04/00374		FOR FURTHER ACTION See paragraph 2 below
International filing date (day/month/year) 13 February 2004 (13.02.2004)	Priority date (day/month/year) 13 February 2003 (13.02.2003)	
International Patent Classification (IPC) or both national classification and IPC IPC(7): G06F 15/16 and US Cl.: 709/228		
Applicant NOKIA CORPORATION		

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(3) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 46.1(b)(3) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1490 Alexandria, Virginia 22313-1490 Facsimile No. (703) 305-3230	Authorized officer <i>for Michelle R. Green</i> Barjoh Jaruenchanwanit Telephone No. (703) 305-3800
---	--

Form PCT/ISA/237 (cover sheet) (January 2004)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/IB04/00374

Box No. 1 Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/IB04/00374

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Box No. V Reasoned statement under Rule 43 bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims <u>NONE</u>	YES
	Claims <u>1-7</u>	NO
Inventive step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-7</u>	NO
Industrial applicability (IA)	Claims <u>1-7</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and explanations:

Claims 1-7 lack novelty under PCT Article 33(2) as being anticipated by Taylor. Taylor discloses a method for providing services over networks, which includes the essence of the invention as claimed. The essence is an implementation script file for detecting capacity of network devices (see Spec. fig. 1). Taylor teaches the same (see Taylor Figure 5, paragraphs 24, 50-51).

PATENT COOPERATION TREATY

96

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

MAGUIRE, Francis, J.
Ware, Fressola, Van Der Sluys &
Adolphson LLP
755 Main Street, P.O. Box 224
Monroe, CT 06468
United States of America

Date of mailing (day/month/year)
22 April 2004 (22.04.2004)

Applicant's or agent's file reference
9441.103-5-1

IMPORTANT NOTIFICATION

International application No.
PCT/IB2004/000374

International filing date (day/month/year)
13 February 2004 (13.02.2004)

1. The following indications appeared on record concerning:

☒ the applicant ☒ the inventor ☐ the agent ☐ the common representative

Name and Address

State of Nationality

State of Residence

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☐ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address

LEON, David
900 Meadow Creek Drive #3061
Irving, TX 75038
United States of America

State of Nationality

FR

State of Residence

US

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

Additional applicant/inventor for US only.

4. A copy of this notification has been sent to:

☒ the receiving Office ☐ the designated Offices concerned
☒ the International Searching Authority ☐ the elected Offices concerned
☐ the International Preliminary Examining Authority ☐ other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 338.70.80

Authorized officer

Fabienne SOCIÉ

Telephone No. (41-22) 338 8175

PATENT COOPERATION TREATY

97

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

MAGUIRE, Francis, J.
Ware, Fressola, Van Der Sluys &
Adolphson LLP
755 Main Street, P.O. Box 224
Monroe, CT 06468
United States of America

Date of mailing (day/month/year) 22 April 2004 (22.04.2004)	
Applicant's or agent's file reference 9441.103-5-1	IMPORTANT NOTIFICATION
International application No. PCT/IB2004/000374	International filing date (day/month/year) 13 February 2004 (13.02.2004)

1. The following indications appeared on record concerning: ☒ the applicant ☒ the inventor ☐ the agent ☐ the common representative		
Name and Address	State of Nationality	State of Residence
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning: ☐ the person ☐ the name ☐ the address ☐ the nationality ☐ the residence		
Name and Address VARSA, Viktor 6215 Love Drive, #2437 Irving, TX 75039 United States of America	State of Nationality HU	State of Residence US
	Telephone No.	
	Facsimile No.	
	Teleprinter No.	
3. Further observations, if necessary: Additional applicant/inventor for US only.		
4. A copy of this notification has been sent to: ☒ the receiving Office ☒ the International Searching Authority ☐ the International Preliminary Examining Authority ☐ the designated Offices concerned ☐ the elected Offices concerned ☐ other:		
The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. (41-22) 338.70.80	Authorized officer: Fabienne SOCIÉ Telephone No. (41-22) 338 9175	

PATENT COOPERATION TREATY

98

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

MAGUIRE, Francis, J.
Ware, Fressola, Van Der Sluys &
Adolphson LLP
755 Main Street, P.O. Box 224
Monroe, CT 06468
United States of AmericaDate of mailing (day/month/year)
22 April 2004 (22.04.2004)Applicant's or agent's file reference
9441.103-5-1

IMPORTANT NOTIFICATION

International application No.
PCT/IB2004/000374International filing date (day/month/year)
13 February 2004 (13.02.2004)

1. The following indications appeared on record concerning:

☒ the applicant ☒ the inventor ☐ the agent ☐ the common representative

Name and Address

State of Nationality

State of Residence

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☐ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address

WANG, Ru-Shang
272 Enclaves Ct.
Coppell, TX 75019
United States of America

State of Nationality

**

State of Residence

US

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

Additional applicant/inventor for US only.

4. A copy of this notification has been sent to:

☒ the receiving Office ☐ the designated Offices concerned
☒ the International Searching Authority ☐ the elected Offices concerned
☐ the International Preliminary Examining Authority ☐ other:The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Fabienne SOCIÉ

Facsimile No. (41-22) 335.70.60

Telephone No. (41-22) 335 8175

FORM PCT/IB/2002 (March 2002)

PCT/IB/2002

PATENT COOPERATION TREATY

99

PCT

From the INTERNATIONAL BUREAU

NOTIFICATION OF THE RECORDING
OF A CHANGE(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

To:

MAGUIRE, Francis, J.
Ware, Fressola, Van Der Sluys &
Adolphson LLP
755 Main Street, P.O. Box 224
Monroe, CT 06468
United States of AmericaDate of mailing (day/month/year)
22 April 2004 (22.04.2004)Applicant's or agent's file reference
9441.103-5-1

IMPORTANT NOTIFICATION

International application No.
PCT/IB2004/000374International filing date (day/month/year)
13 February 2004 (13.02.2004)

1. The following indications appeared on record concerning:

☒ the applicant ☒ the inventor ☐ the agent ☐ the common representative

Name and Address

AKSU, Emre, Baris
CURCIO, Igor, Danilo, Diego

State of Nationality

TR

State of Residence

FI

Telephone No.

Facsimile No.

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☐ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address

State of Nationality

State of Residence

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

Please note that both applicant/inventors indicated in Box 1 are now applicant/inventors
for US only.

4. A copy of this notification has been sent to:

☒ the receiving Office ☐ the designated Offices concerned
☒ the International Searching Authority ☐ the elected Offices concerned
☐ the International Preliminary Examining Authority ☐ other:The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Fabienne SOCIÉ

Facsimile No. (41-22) 338.70.60

Telephone No. (41-22) 338 9176

Form PCT/IB/2004 (March 2004)

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF THE RECORDING OF A CHANGE

(PCT Rule 92bis.1 and
Administrative Instructions, Section 422)

From the INTERNATIONAL BUREAU

To:

MAGUIRE, Francis, J.
Ware, Fressola, Van Der Sluys &
Adolphson LLP
755 Main Street, P.O. Box 224
Monroe, CT 06468
United States of America

Date of mailing (day/month/year)
22 April 2004 (22.04.2004)

Applicant's or agent's file reference
9441.103-5-1

IMPORTANT NOTIFICATION

International application No.
PCT/IB2004/000374

International filing date (day/month/year)
13 February 2004 (13.02.2004)

1. The following indications appeared on record concerning:

☒ the applicant ☐ the inventor ☐ the agent ☐ the common representative

Name and Address

NOKIA CORPORATION
Keilalahdentie 4
FIN-02150 Espoo
Finland

State of Nationality
FI

State of Residence
FI

Telephone No.
358 10 505 6800

Facsimile No.
358 10 505 6847

Teleprinter No.

2. The International Bureau hereby notifies the applicant that the following change has been recorded concerning:

☐ the person ☐ the name ☐ the address ☐ the nationality ☐ the residence

Name and Address

State of Nationality

State of Residence

Telephone No.

Facsimile No.

Teleprinter No.

3. Further observations, if necessary:

Please note that the applicant indicated in Box 1 is now applicant for all designated States except US.

4. A copy of this notification has been sent to:

☒ the receiving Office ☐ the designated Offices concerned
☒ the International Searching Authority ☐ the elected Offices concerned
☐ the International Preliminary Examining Authority ☐ other:

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 338.70.60

Authorized officer

Fabienne SOCIÉ

Telephone No. (41-22) 338 9175

MAY - 6 2004

PCT

FIRST NOTICE INFORMING THE APPLICANT OF
THE COMMUNICATION OF THE INTERNATIONAL
APPLICATION TO DESIGNATED OFFICES WHICH
DO NOT APPLY THE 30 MONTH TIME LIMIT
UNDER ARTICLE 22(1))

(PCT Rule 47.1(c))

To:

MAGUIRE, Francis, J.
Ware, Fressola, Van Der Sluys & Adolphson LLP
755 Main Street, P.O. Box 224
Monroe, CT 06468
ETATS-UNIS D'AMERIQUE

101

Date of mailing (day/month/year)

16 September 2004 (16.09.2004)

Applicant's or agent's file reference

9441.103-5-1

IMPORTANT NOTICE

International application No.

PCT/IB2004/000374

International filing date (day/month/year)

13 February 2004 (13.02.2004)

Priority date (day/month/year)

13 February 2003 (13.02.2003)

Applicant

NOKIA CORPORATION et al

1. **ATTENTION:** For any designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002 (30 months from the priority date), does apply, please see Form PCT/IB/308 (Second and Supplementary Notice) (to be issued promptly after the expiration of 28 months from the priority date).

2. Notice is hereby given that the following designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002, does not apply, has/have requested that the communication of the international application, as provided for in Article 20, be effected under Rule 93bis.1. The International Bureau has effected that communication on the date indicated below:
26 August 2004 (26.08.2004)

CH

In accordance with Rule 47.1(c-bis)(i), those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

3. The following designated Offices, for which the time limit under Article 22(1), as in force from 1 April 2002, does not apply, have not requested, as at the time of mailing of the present notice, that the communication of the international application be effected under Rule 93bis.1:

FI, LU, SE, TZ, UG, ZM

In accordance with Rule 47.1(c-bis)(ii), those Offices accept the present notice as conclusive evidence that the Contracting State for which that Office acts as a designated Office does not require the furnishing, under Article 22, by the applicant of a copy of the international application.

4. **TIME LIMITS** for entry into the national phase

For the designated Office(s) listed above, and unless a demand for international preliminary examination has been filed before the expiration of 19 months from the priority date (see Article 39(1)), the applicable time limit for entering the national phase will, subject to what is said in the following paragraph, be 20 MONTHS from the priority date.

In practice, time limits other than the 20-month time limit will continue to apply, for various periods of time, in respect of certain of the designated Offices listed above. For regular updates on the applicable time limits (20 or 21 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at <http://www.wipo.int/pct/en/index.html>.

It is the applicant's sole responsibility to monitor all these time limits.

RECEIVED
WARE, FRESSOLA, VAN DER SLUYS
& ADOLPHSON

SEP 24 2004

FILE 944-001.103-5-1
A.S.D. KPL W

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Gabriele Bähr

Facsimile No. 141 22 740 13 34

Facsimile No. 141 22 729 70 40

PCT

**SECOND AND SUPPLEMENTARY NOTICE
INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION TO DESIGNATED OFFICES
WHICH APPLY THE 30 MONTH TIME
LIMIT UNDER ARTICLE 22(1))**

(PCT Rule 47.1(c))

To:

MAGUIRE, Francis, J.
Ware, Fressola, Van Der Stuyt & Adolphson LLP
755 Main Street, P.O. Box 224
Monroe, CT 06468
ETATS-UNIS D'AMERIQUE

102

Date of mailing (day/month/year)

16 June 2005 (16.06.2005)

Applicant's or agent's file reference

9441.103-5-1

IMPORTANT NOTICEInternational application No.
PCT/IB2004/000374International filing date (day/month/year)
13 February 2004 (13.02.2004)Priority date (day/month/year)
13 February 2003 (13.02.2003)

Applicant

NOKIA CORPORATION et al

1. **ATTENTION:** For any designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002 (30 months from the priority date), does not apply, please see Form PCT/IB/308 (First Notice) issued previously.
2. Notice is hereby given that the following designated Office(s), for which the time limit under Article 22(1), as in force from 1 April 2002, does apply, has/have requested that the communication of the international application, as provided for in Article 20, be effected under Rule 93bis.1. The International Bureau has effected that communication on the date indicated below:
26 August 2004 (26.08.2004)

AU, AZ, BY, CN, CO, DZ, EP, HU, KG, KP, KR, MD, MK, MZ, NA, RU, SY, TM, US

In accordance with Rule 47.1(c-bis)(i), those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

3. The following designated Offices, for which the time limit under Article 22(1), as in force from 1 April 2002, does apply, have not requested, as at the time of mailing of the present notice, that the communication of the international application be effected under Rule 93bis.1:

AE, AG, AL, AM, AP, AT, BA, BB, BG, BR, BW, BZ, CA, CR, CU, CZ, DE, DK, DM, EA, EC, EE, EG, ES, FI, GB, GD,
GE, GH, GM, GR, ID, IL, IN, IS, JP, KE, KZ, LC, LK, LR, LS, LT, LV, MA, MG, MN, MW, MX, NI, NO, NZ, OA, OM, PG,
PH, PL, PT, RO, SC, SD, SG, SK, SL, TJ, TN, TR, TT, UA, UZ, VC, VN, YU, ZA, ZW

In accordance with Rule 47.1(c-bis)(ii), those Offices accept the present notice as conclusive evidence that the Contracting State for which that Office acts as a designated Office does not require the furnishing, under Article 22, by the applicant of a copy of the international application.

4. **TIME LIMITS** for entry into the national phase

For the designated or elected Office(s) listed above, the applicable time limit for entering the national phase will, subject to what is said in the following paragraph, be 30 MONTHS from the priority date.

In practice, time limits other than the 30-month time limit will continue to apply, for various periods of time, in respect of certain of the designated or elected Office(s) listed above. For regular updates on the applicable time limits (30 or 31 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at <http://www.wipo.int/pct/en/index.html>.

It is the applicant's sole responsibility to monitor all these time limits.

RECEIVED

JUN 23 2005

944.001.103-5-1

KOL

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Gabriele Bähr

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

INVITATION TO CORRECT PRIORITY CLAIM

(PCT Rules 4.10, 26bis.1, 26bis.2(a) and (b))

To:

MAGUIRE, Francis, J.
Ware, Fressola, Van Der Sluys & Adolphson
LLP
755 Main Street, P.O. Box 224
Monroe, CT 06468
ETATS-UNIS D'AMERIQUE

Date of mailing (day/month/year) 02 April 2004 (02.04.2004)	
Applicant's or agent's file reference 9441.103-5-1	REPLY DUE See item 1
International application No. PCT/IB2004/000374	International filing date (day/month/year) 13 February 2004 (13.02.2004)
Applicant NOKIA CORPORATION	

The applicant is hereby invited, within the time limit indicated below, to correct, by a notice submitted to the International Bureau, defects in the priority claim(s), as indicated in the Annex:

- Time limit to respond to this invitation (Rule 26bis.1(a)):
 - within 16 months from the (earliest) priority date; or
 - if the (earliest) priority date is changed as a result of the correction or addition of the (earliest) priority claim, within 16 months from that (earliest) priority date so changed,
 whichever expires first, provided that such a notice may, in any event, be submitted until the expiration of four months from the international filing date.

Failure to respond to this invitation within the prescribed time limit may result in the priority claim concerned to be considered, for the purposes of the procedure under the PCT, not to have been made (Rule 26bis.2(b)).

- In the case where multiple priorities have been claimed, this invitation relates to the following priority claim(s):
US 14 February 2003 (14.02.2003) 60/644,828

- A copy of this invitation is being sent to the receiving Office.

RECEIVED
WARE FRESSOLA VAN DER SLUYS

APR 16 2004

FILE 944.001.103.5-1
ANS'D. KQ ke

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. (41-22) 338-7060	Authorized officer Fabienne SOCIE Telephone No. (41-22) 338.91.75
---	---

3/6

The International Bureau has found the following defects in the priority claim(s):

1. Failure to Comply with the Requirements of Rule 4.10

a. ☐ National application

- ☐ Missing indication of the filing date of the earlier application.
- ☐ Filing date indicated for the earlier application does not fall within the period of 12 months preceding the international filing date.
- ☐ Missing indication of the number of the earlier application.*
- ☐ Missing indication of the country party to the Paris Convention for the Protection of Industrial Property, or of the Member of the World Trade Organization that is not party to that Convention, in which the earlier national application was filed.
- ☐ The country indicated is neither a party to the Paris Convention for the Protection of Industrial Property nor a Member of the World Trade Organization.

b. ☐ Regional application

- ☐ Missing indication of the filing date of the earlier application.
- ☐ Filing date indicated for the earlier application does not fall within the period of 12 months preceding the international filing date.
- ☐ Missing indication of the number of the earlier application.*
- ☐ Missing indication of the authority entrusted with the granting of regional patents under the applicable regional patent treaty.
- ☐ The authority indicated as the authority entrusted with the granting of regional patents does not grant regional patents.
- ☐ The priority claim in relation to the ARIPO application does not indicate either at least one country party to the Paris Convention for the Protection of Industrial Property, or at least one Member of the World Trade Organization, for which the earlier application was filed.

c. ☐ International application

- ☐ Missing indication of the filing date of the earlier application.
- ☐ Filing date indicated for the earlier application does not fall within the period of 12 months preceding the international filing date.
- ☐ Missing indication of the number of the earlier application.*
- ☐ Missing indication of the receiving Office with which it was filed.

2. Inconsistency with the Corresponding Indications in the Priority Document*

a. ☐ Inconsistency with regard to the filing date of the earlier application:

The request indicates:

The priority document indicates:

b. ☒ Inconsistency with regard to the number of the earlier application:

The request indicates: 60/644,828

The priority document indicates: 60/448,284

c. ☐ Inconsistency with regard to the country party to the Paris Convention for the Protection of Industrial Property or the Member of the World Trade Organization in which the national application was filed:

The request indicates:

The priority document indicates:

d. ☐ Inconsistency with regard to the authority entrusted with the granting of regional patents under the applicable regional patent treaty:

The request indicates:

The priority document indicates:

e. ☐ Inconsistency with regard to the receiving Office with which the international application was filed:

The request indicates:

The priority document indicates:

* Even if this defect is not corrected in response to this invitation, the priority claim concerned will not be considered not to have been made (Rule 26bis.2(b)).

**WARE, FRESSOLA, VAN DER SLUYS
& ADOLPHSON LLP**

Patent, Trademark, Copyright and Computer Law Counsel
www.wfva.net

BRADFORD GREEN, BUILDING FIVE
755 MAIN STREET
POST OFFICE BOX 224
MONROIE, CONNECTICUT 06468
TELEPHONE: (203) 261-1234
FACSIMILE: (203) 261-5676
E-MAIL: mail@wfva.net

ROBERT H. WARE
ALFRED A. FRESSOLA
K. BRADFORD ADOLPHSON
FRANCIS J. MAGUIRE
WILLIAM J. BARBER
JAMES A. RETTER, M.D.
JAMES R. FREDERICK
MILTON M. OLIVER*
JACK M. PASQUALE
ANDREW T. HYMAN

PETER C. VAN DER SLUYS (1939-1991)

KENNETH Q. LAO, Ph.D., Patent Agent
ANATOLY FRENKEL, Ph.D., Patent Agent
*MA and NY Bar

19 April 2004
VIA FACSIMILE (9 011 41 22 910 0610)
Confirmation by Airmail

International Bureau of WIPO
PCT Receiving Office Section
34, chemin des Colombettes
1211 Geneva 20
Switzerland
Attention: Fabienne Socie

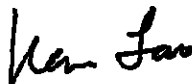
Re: PCT Application
METHOD FOR SIGNALING STREAMING QUALITY ADAPTATION
AND CONTROL MECHANISMS IN MULTIMEDIA STREAMING
International Application No. PCT/IB2004/000374
Our Ref. No. 944-001.103-5-1
First Applicant: Nokia Corporation

Reference is made to the Invitation to Correct Priority Claim, mailed 02 April 2004 (copy enclosed).

Section 2b of the Annex to Form PCT/IB/316 indicates that there was an inconsistency with regard to the number of the earlier application. We confirm that the PCT erroneously listed one of the four priority documents as 60/644,828, when the correct number as listed on the actual certified priority document is 60/448,284. The error was typographical in nature and has been corrected on page 3 of the enclosed copy of the PCT Request.

Accordingly, we respectfully submit that the priority document 60/448,284 be accepted for the above-referenced application.

Respectfully submitted,


Kenneth Q. Lao
Reg. #40,061

I hereby certify that this correspondence is being
transmitted via facsimile to 011 41 22 910 0610 on
the date shown below with a confirmation by airmail
addressed to the: International Bureau of WIPO,
PCT Receiving Office Section, 34, chemin des
Colombettes, 1211 Geneva 20, Switzerland.

 4-19-04
Cathy Wilcox Date

PCT REQUEST

Original (for SUBMISSION)

106
150

0	For receiving Office use only	
0-1	International Application No.	
0-2	International Filing Date	
0-3	Name of receiving Office and "PCT International Application"	
0-4	Form - PCT/RO/101 PCT Request Prepared Using	PCT-SAFE [EASY mode] Version 3.50 (Build 0002.150)
0-5	Petition . The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
0-6	Receiving Office (specified by the applicant)	International Bureau of the World Intellectual Property Organization (RO/IB)
0-7	Applicant's or agent's file reference	9441.103-5-1
I	Title of Invention	METHOD FOR SIGNALING STREAMING QUALITY ADAPTATION AND CONTROL MECHANISMS IN MULTIMEDIA STREAMING
II	Applicant	
II-1	This person is:	applicant only
II-2	Applicant for	all designated States
II-4	Name:	NOKIA CORPORATION
II-5	Address:	Keilalahdentie 4 02150 Espoo Finland
II-6	State of nationality	FI
II-7	State of residence	FI
II-8	Telephone No.	358 10 505 6800
II-9	Facsimile No.	358 10 505 6847

PCT REQUEST

Original (for SUBMISSION)

III-1	Applicant and/or inventor	
III-1-1	This person is:	applicant only
III-1-2	Applicant for	LC
III-1-4	Name:	NOKIA INC.
III-1-5	Address:	6000 Connection Drive Irving, Texas 75039 United States of America
III-1-6	State of nationality	US
III-1-7	State of residence	US
III-2	Applicant and/or inventor	
III-2-1	This person is:	applicant and inventor
III-2-2	Applicant for	all designated States
III-2-4	Name (LAST, First)	AKSU, Emre Baris
III-2-5	Address:	Atomikatu 5 A 12 33721 Tampere Finland
III-2-6	State of nationality	TR
III-2-7	State of residence	FI
III-3	Applicant and/or inventor	
III-3-1	This person is:	applicant and inventor
III-3-2	Applicant for	all designated States
III-3-4	Name (LAST, First)	CURCIO, Igor Danilo Diego
III-3-6	Address:	Hatanpään Valtatie 12 C 57 33100 Tampere Finland
III-3-6	State of nationality	IT
III-3-7	State of residence	FI

PCT REQUEST

Original (for SUBMISSION)

IV-1	Agent or common representative; or address for correspondence The person identified below is hereby/ has been appointed to act on behalf of the applicant(s) before the competent International Authorities as:	agent
IV-1-1	Name (LAST, First)	MAGUIRE, Francis, J.
IV-1-2	Address:	Ware, Fressola, Van Der Sluys & Adolphson LLP 755 Main Street, P.O. Box 224 Monroe, Connecticut 06468 United States of America
IV-1-3	Telephone No.	203-261-1234
IV-1-4	Facsimile No.	203-261-5676
IV-1-5	e-mail	fjm@wfva.net
IV-1-6	Agent's registration No.	31,391
IV-2	Additional agent(s)	additional agent(s) with same address as first named agent
IV-2-1	Name(s)	FRENKEL, Anatoly (54,106); BARBER, William, J. (32,720); FRESSOLA, Alfred, A. (27,550); LAO, Kenneth, Q. (40,061); PASQUALE, Jack, M. (31,052); RETTER, James, A. (41,266); HYMAN, Andrew, T. (45,858)
V	DESIGNATIONS	
V-1	The filing of this request constitutes under Rule 4.9(a), the designation of all Contracting States bound by the PCT on the international filing date, for the grant of every kind of protection available and, where applicable, for the grant of both regional and national patents.	
VI-1	Priority claim of earlier national application	
VI-1-1	Filing date	13 February 2003 (13.02.2003)
VI-1-2	Number	60/447,264
VI-1-3	Country	US
VI-2	Priority claim of earlier national application	
VI-2-1	Filing date	14 February 2003 (14.02.2003)
VI-2-2	Number	~~60/544,820~~ 60/448,284
VI-2-3	Country	US

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PCT REQUEST

Original (for SUBMISSION)

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VI-3	Priority claim of earlier national application		
VI-3-1	Filing date	14 February 2003 (14.02.2003)	
VI-3-2	Number	60/448,299	
VI-3-3	Country	US	
VI-4	Priority claim of earlier national application		
VI-4-1	Filing date	14 February 2003 (14.02.2003)	
VI-4-2	Number	60/448,309	
VI-4-3	Country	US	
VII-1	International Searching Authority Chosen	United States Patent and Trademark Office (USPTO) (ISA/US)	
VIII	Declarations	Number of declarations	
VIII-1	Declaration as to the identity of the inventor	-	
VIII-2	Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent	-	
VIII-3	Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application	-	
VIII-4	Declaration of inventorship (only for the purposes of the designation of the United States of America)	-	
VIII-5	Declaration as to non-prejudicial disclosures or exceptions to lack of novelty	-	
IX	Check list	number of sheets	electronic file(s) attached
IX-1	Request (including declaration sheets)	5	-
IX-2	Description	17	-
IX-3	Claims	2	-
IX-4	Abstract	1	✓
IX-5	Drawings	12	-
IX-7	TOTAL	37	

PCT REQUEST

Original (for SUBMISSION)

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	Accompanying items	paper document(s) attached	electronic file(s) attached
IX-6	Fee calculation sheet	✓	-
IX-8	Original separate power of attorney	✓	-
IX-11	Copy of general power of attorney	reference no. GPA 00/0317	-
IX-11	Copy of general power of attorney	reference no. GPA 01/0109	-
IX-13	Priority document(s)	Item(s) VI-1 VI-2 VI-3 VI-4	-
IX-17	PCT-SAFE physical media	-	✓
IX-18	Figure of the drawings which should accompany the abstract	Fig. 13	
IX-20	Language of filing of the international application	English	
X-1	Signature of applicant, agent or common representative		
X-1-1	Name:	MAGUIRE, Francis J.	
X-1-2	Name of signatory		
X-1-3	Capacity		

FOR RECEIVING OFFICE USE ONLY

10-1	Date of actual receipt of the purported international application	
10-2	Drawings:	
10-2-1	Received	
10-2-2	Not received	
10-3	Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application	
10-4	Date of timely receipt of the required corrections under PCT Article 11(2)	
10-5	International Searching Authority	ISA/US
10-6	Transmittal of search copy delayed until search fee is paid	

FOR INTERNATIONAL BUREAU USE ONLY

11-1	Date of receipt of the record copy by the International Bureau	
------	--	--

PCT (ANNEX - FEE CALCULATION SHEET)

Original (for SUBMISSION)
(This sheet is not part of and does not count as a sheet of the international application)

0	For receiving Office use only			
0-1	International Application No.			
0-2	Date stamp of the receiving Office			
0-4	Form PCT/RO/101 (Annex) PCT Fee Calculation Sheet			
0-4-1	Prepared Using	PCT-SAFE [EASY mode] Version 3.50 (Build 0002.150)		
0-9	Applicant's or agent's file reference	9441.103-5-1		
2	Applicant	NOKIA CORPORATION		
12	Calculation of prescribed fees	fee amount/multiplier	Total amounts (USD)	
12-1	Transmittal fee T	⇒	74	
12-2-1	Search fee S	⇒	1000	
12-2-2	International search to be carried out by	US		
12-3	International filing fee (first 30 sheets) H	1035		
12-4	Remaining sheets	7		
12-5	Additional amount (X)	11		
12-6	Total additional amount I2	77		
12-7	I1 + I2 = I	1112		
12-12	EASY Filing reduction R	-74		
12-13	Total international filing fee (I-R) I	⇒	1038	
12-14	Fee for priority document Number of priority documents requested	0		
12-15	Fee per document (X)	0		
12-16	Total priority document fee: P	⇒		
12-17	TOTAL FEES PAYABLE (T+S+I+P)	⇒	2112	
12-19	Mode of payment	cheque		

PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION RELATING TO PRIORITY CLAIM

(PCT Rules 26bis.1 and 26bis.2 and Administrative Instructions, Sections 402(c) and 409)

To:

MAGUIRE, Francis, J.
Ware, Fressola, Van Der Sluys &
Adolphson LLP
755 Main Street, P.O. Box 224
Monroe, CT 06468
United States of America

Date of mailing (day/month/year)
22 April 2004 (22.04.2004)

Applicant's or agent's file reference
9441.103-5-1

IMPORTANT NOTIFICATION

International application No.
PCT/IB2004/000374

International filing date (day/month/year)
13 February 2004 (13.02.2004)

Applicant

NOKIA CORPORATION et al

The applicant is hereby notified of the following in respect of the priority claim(s) made in the international application.

1. ☒ Correction of priority claim. In accordance with the applicant's notice received on: 19 April 2004 (19.04.2004), the following priority claim has been corrected, according to paragraph 176 of the PCT Receiving Guidelines where application, to read as follows:

US 14 February 2003 (14.02.2003) 60/448,284

- ☐ even though the indication of the number of the earlier application is missing.
☐ even though the following indication in the priority claim is not the same as the corresponding indication appearing in the priority document:

2. ☐ Addition of priority claim. In accordance with the applicant's notice received on: , the following priority claim has been added:

- ☐ even though the indication of the number of the earlier application is missing.
☐ even though the following indication in the priority claim is not the same as the corresponding indication appearing in the priority document:

3. ☐ As a result of the correction and/or addition of (s) priority claim(s) under items 1 and/or 2, the (earliest) priority date is:

4. ☐ Priority claim considered not to have been made.

- ☐ The applicant failed to respond to the invitation under Rule 26bis.2(a) (Form PCT/IB/316) within the prescribed time limit.
☐ The applicant's notice was received after the expiration of the prescribed time limit under Rule 26bis.1(a).
☐ The applicant's notice failed to correct the priority claim so as to comply with the requirements of Rule 4.10.

The applicant may, before the technical preparations for international publication have been completed and subject to the payment of a fee, request the International Bureau to publish, together with the international application, information concerning the priority claim. See Rule 26bis.2(c) and the PCT Applicant's Guide, Volume I, Annex B2(II).

5. ☒ Where multiple priorities have been claimed, the above item(s) relate(s) to the following priority claim(s):
US 14 February 2003 (14.02.2003) 60/448,284

MAY - 6 2004

6. A copy of this notification has been sent to the receiving Office and

- ☒ to the International Searching Authority (where the international search report and the written opinion of the International Searching Authority have not yet been issued).
☐ the designated Offices (in accordance with Rule 83bis).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Authorized officer

Fabienne SOCIÉ

Facsimile No. (41-22) 338.70.60

Telephone No. (41-22) 338 8175

Form PCT/IB/316 (January 2004)

**WARE, FRESSOLA, VAN DER SLUYS
& ADOLPHSON LLP**

Patent, Trademark, Copyright and Computer Law Counsel
www.wfva.net

BRADFORD GREEN, BUILDING FIVE
735 MAIN STREET
POST OFFICE BOX 224
MONROE, CONNECTICUT 06468
TELEPHONE: (203) 261-1274
FACSIMILE: (203) 261-5676
E-MAIL: mail@wfva.net

International Bureau of WIPO
PCT Receiving Office Section
34, chemin des Colombettes
1211 Geneva 20
Switzerland
Attention: Mr. Eric Lesot

15 April 2004
VIA FACSIMILE (9 011 41 22 910 0610)
Confirmation by Airmail

ROBERT H. WARE
ALFRED A. FRESSOLA
K. BRADFORD ADOLPHSON
FRANCIS J. MAGUIRE
WILLIAM J. BARBER
JAMES A. REITNER, Ph.D.
JAMES R. FREDERICK
MILTON M. OLIVER
JACK M. PASQUALE
ANDREW T. ITYMAN

PETER C. VAN DER SLUYS (1939-1991)

KENNETH Q. LAO, Ph.D., Patent Agent
ANATOLY FRENKEL, Ph.D., Patent Agent
*MA and NY Res

Re: International Application No. PCT/IB2004/000374, Filed February 13, 2004
METHOD FOR SIGNALING STREAMING QUALITY ADAPTATION
AND CONTROL MECHANISMS IN MULTIMEDIA STREAMING
Our Ref. No. 944-001.103-5-1
First Applicant: NOKIA CORPORATION

PCT RECORDING OF A CHANGE UNDER RULE 92^{bis}

Due to an oversight, we omitted the names of two "applicant/inventors" and one "inventor only" on the PCT Request for the above-referenced application.

Please add the following "applicant/inventors" (for United States of America Only) to International Application No. PCT/IB2004/000370:

--David LEON, 900 Meadow Creek Drive, #3061, Irving, Texas 75038, USA; State of Nationality: FR France; State of Residence: US United States of America

--Viktor VARSA, 6215 Love Drive, #2437, Irving, Texas 75039, USA; State of Nationality: HU Hungary; State of Residence: US United States of America

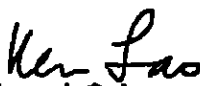
Please add the following "inventor only" (for United States of America Only) to International Application No. PCT/IB2004/000370:

--Ru-Shang WANG, 272 Enclaves Ct., Coppell, Texas 75019, USA

Please also change applicant NOKIA CORPORATION to be applicant for "All Designated States Except US", and change applicant/inventors AKSU and CURCIO to be applicant/inventors for "United States of America Only".

Please let us know if there are any problems making these changes. Thank you for your assistance.

Respectfully submitted,


Kenneth Q. Lao
Reg. #40,061

I hereby certify that this correspondence is being transmitted via facsimile to 011 41 22 910 0610 on the date shown below with a confirmation by airmail addressed to the: International Bureau of WIPO, PCT Receiving Office Section, 34, chemin des Colombettes, 1211 Geneva 20, Switzerland.

 15 APR 2004
Cathy Wilcox Date

IPEA/ US

PCT

CHAPTER II

DEMAND

under Article 31 of the Patent Cooperation Treaty:

The undersigned requests that the international application specified below be the subject of international preliminary examination according to the Patent Cooperation Treaty.

For International Preliminary Examining Authority use only		
Identification of IPEA		Date of receipt of DEMAND
Box No. I IDENTIFICATION OF THE INTERNATIONAL APPLICATION		Applicant's or agent's file reference 944-001.103-5-1
International application No. PCT/IB2004/000374	International filing date (day/month/year) 13 February 2004 (13.02.2004)	(Earliest) Priority date (day/month/year) 13 February 2003 (13.02.2003)
Title of invention METHOD FOR SIGNALING STREAMING QUALITY ADAPTATION AND CONTROL MECHANISMS IN MULTIMEDIA STREAMING		
Box No. II APPLICANT(S)		
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country) Nokia Corporation Keilalahdentie 4 FIN-02150 Espoo FINLAND		Telephone No. +358 10 505 6800
		Facsimile No. +358 10 505 6847
		Teleprinter No.
		Applicant's registration No. with the Office
State (that is, country) of nationality: FINLAND		State (that is, country) of residence: FINLAND
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country) Nokia Inc. 6000 Connection Drive Irving, TX 75039		
State (that is, country) of nationality: USA		State (that is, country) of residence: USA
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country) AKSU, Emre Baris Atomikatu 5 A 12 FIN-33721 Tampere FINLAND		
State (that is, country) of nationality: TURKEY		State (that is, country) of residence: FINLAND
☒ Further applicants are indicated on a continuation sheet.		

Continuation of Box No. II APPLICANT(S)

*If none of the following sub-boxes is used, this sheet should not be included in the demand.*Name and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

CURCIO, Igor Danilo Diego
Hatanpaan Valtatie 12 C 57
FIN-33100 Tampere
FINLAND

State *(that is, country)* of nationality:
ITALYState *(that is, country)* of residence:
FINLANDName and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

LEON, David
900 Meadow creek Drive, #3061
Irving, TX 75038
USA

State *(that is, country)* of nationality:
FRANCEState *(that is, country)* of residence:
USAName and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

VARSA, Viktor
6215 Love Drive, #2437
Irving, TX 75039
USA

State *(that is, country)* of nationality:
HUNGARYState *(that is, country)* of residence:
USAName and address: *(Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country.)*

WANG, Ru-Shang
272 Enclaves Ct.
Coppell, TX 75019
USA

State *(that is, country)* of nationality:
TAIWANState *(that is, country)* of residence:
USA☐ Further applicants are indicated on another continuation sheet.

Box No. III AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE

The following person is ☒ agent ☐ common representativeand ☒ has been appointed earlier and represents the applicant(s) also for international preliminary examination.☐ is hereby appointed and any earlier appointment of (an) agent(s)/common representative is hereby revoked.☐ is hereby appointed, specifically for the procedure before the International Preliminary Examining Authority, in addition to the agent(s)/common representative appointed earlier.Name and address: (Family name followed by given name; for a legal entity, full official designation.
The address must include postal code and name of country.)LAO, Kenneth Q.
WARE, FRESSOLA, VAN DER SLUYS & ADOLPHSON LLP
755 Main Street, P.O. Box 224
Monroe, CT 06468Telephone No.
203-261-1234Facsimile No.
203-261-5676

Teleprinter No.

Agent's registration No. with the Office
USPTO No. 40,061☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.

Box No. IV BASIS FOR INTERNATIONAL PRELIMINARY EXAMINATION

Statement concerning amendments: *

1. The applicant wishes the international preliminary examination to start on the basis of:

☐ the international application as originally filedthe description ☐ as originally filed☐ as amended under Article 34the claims ☐ as originally filed☐ as amended under Article 19 (together with any accompanying statement)☐ as amended under Article 34the drawings ☐ as originally filed☐ as amended under Article 342. ☐ The applicant wishes any amendment to the claims under Article 19 to be considered as reversed.3. ☐ The applicant wishes the start of the international preliminary examination to be postponed until the expiration of the applicable time limit under Rule 69.1(d).4. ☐ The applicant expressly wishes the international preliminary examination to start earlier than at the expiration of the applicable time limit under Rule 54bis.1(a).

* Where no check-box is marked, international preliminary examination will start on the basis of the international application as originally filed or, where a copy of amendments to the claims under Article 19 and/or amendments of the international application under Article 34 are received by the International Preliminary Examining Authority before it has begun to draw up a written opinion or the international preliminary examination report, as so amended.

Language for the purposes of international preliminary examination: English☒ which is the language in which the international application was filed.☐ which is the language of a translation furnished for the purposes of international search.☐ which is the language of publication of the international application.☐ which is the language of the translation (to be) furnished for the purposes of international preliminary examination.

Box No. V ELECTION OF STATES

The filing of this demand constitutes the election of all Contracting States which are designated and are bound by Chapter II of the PCT.

Box No. VI CHECK LIST

The demand is accompanied by the following elements, in the language referred to in Box No. IV, for the purposes of international preliminary examination:

- | | | |
|--|---|--------|
| 1. translation of international application | : | sheets |
| 2. amendments under Article 34 | : | sheets |
| 3. copy (or, where required, translation) of amendments under Article 19 | : | sheets |
| 4. copy (or, where required, translation) of statement under Article 19 | : | sheets |
| 5. letter | : | sheets |
| 6. other (specify) | : | sheets |

For International Preliminary
Examining Authority use only

received

not received

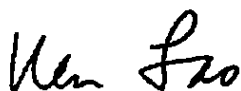
☐☐☐☐☐☐☐☐☐☐☐☐

The demand is also accompanied by the item(s) marked below:

- | | |
|---|--|
| 1. ☐ fee calculation sheet | 5. ☐ statement explaining lack of signature |
| 2. ☐ original separate power of attorney | 6. ☐ sequence listing in computer readable form |
| 3. ☐ original general power of attorney | 7. ☐ tables in computer readable form related to a sequence listing |
| 4. ☒ copy of general power of attorney; reference number, if any: <u>GPA 01/0108; GPA 00/0317</u> | 8. ☐ other (specify): |

Box No. VII SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Next to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the demand).



Kenneth Q. Lao

(Appointed as an additional agent on PCT Request)

For International Preliminary Examining Authority use only

1. Date of actual receipt of DEMAND:

2. Adjusted date of receipt of demand due to CORRECTIONS under Rule 60.1(b):

3. ☐ The date of receipt of the demand is AFTER the expiration of 19 months from the priority date and item 4 or 5, below, does not apply.
☐ The applicant has been informed accordingly.
4. ☐ The date of receipt of the demand is WITHIN the time limit of 19 months from the priority date as extended by virtue of Rule 80.5.
5. ☐ Although the date of receipt of the demand is after the expiration of 19 months from the priority date, the delay in arrival is EXCUSED pursuant to Rule 82.

6. ☐ The date of receipt of the demand is AFTER the expiration of the time limit under Rule 54bis.1(a) and item 7 or 8, below, does not apply.

7. ☐ The date of receipt of the demand is WITHIN the time limit under Rule 54bis.1(a) as extended by virtue of Rule 80.5.

8. ☐ Although the date of receipt of the demand is after the expiration of the time limit under Rule 54bis.1(a), the delay in arrival is EXCUSED pursuant to Rule 82.

For International Bureau use only

Demand received from IPEA on:

PCT

FEE CALCULATION SHEET

Annex to the Demand

International application No. PCT/IB2004/000374	For International Preliminary Examining Authority use only
Applicant's or agent's file reference 944-001.103-5-1	Date stamp of the IPEA
Applicant Nokia Corporation Nokia Inc.	
CALCULATION OF PRESCRIBED FEES	
1. Preliminary examination fee	600 P
2. Handling fee (<i>Applicants from certain States are entitled to a reduction of 75% of the handling fee. Where the applicant is (or all applicants are) so entitled, the amount to be entered at H is 25% of the handling fee.</i>)	162 H
3. Total of prescribed fees Add the amounts entered at P and H and enter total in the TOTAL box	USD 762
TOTAL	
MODE OF PAYMENT	
☐ authorization to charge deposit account with the IPEA (see below)	☐ cash
☒ cheque	☐ revenue stamps
☐ postal money order	☐ coupons
☐ bank draft	☐ other (specify):
AUTHORIZATION TO CHARGE (OR CREDIT) DEPOSIT ACCOUNT <i>(This mode of payment may not be available at all IPEAs)</i>	
☐ Authorization to charge the total fees indicated above.	IPEA/ <u>US</u>
☒ <i>(This check-box may be marked only if the conditions for deposit accounts of the IPEA so permit)</i> Authorization to charge any deficiency or credit any overpayment in the total fees indicated above.	Deposit Account No.: <u>23-0442</u>
	Date: <u>August 6, 2004</u>
	Name: <u>Kenneth Q. Lao</u>
	Signature: <u>Ken Lao</u>

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

PCT

NOTIFICATION OF RECEIPT OF DEMAND BY COMPETENT INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

(PCT Rules 59.3(e) and 61.1(b), first sentence
and Administrative Instructions, Section 601(a))

To:

FRANCIS J. MAGUIRE
WARE, FRESSOLA, VAN DER SLUYS &
ADOLPHSON LLP
755 MAIN STREET, PO BOX 224
MONROE, CONNECTICUT 06468

Date of mailing
(day/month/year)

23 MAY 2005

Applicant's or agent's file reference
9441.103-5-1

IMPORTANT NOTIFICATION

International application No.
PCT/IB04/00374

International filing date (day/month/year)
13 Feb 2004

Priority date (day/month/year)
13 Feb 2003

Applicant
NOKIA CORPORATION

1. The applicant is hereby notified that this International Preliminary Examining Authority considers the following date as the date of receipt of the demand for international preliminary examination of the international application:

06 AUGUST 2004 (08.08.04)

2. That date of receipt is:

- ☒ the actual date of receipt of the demand by this Authority (Rule 61.1(b)).
☐ the actual date of receipt of the demand on behalf of this Authority (Rule 59.3(e)).
☐ the date on which this Authority has, in response to the invitation to correct defects in the demand (Form PCT/IPEA/402), received the required corrections.

3. ☐ **ATTENTION:** That date of receipt is after the expiration of 19 months from the priority date. Consequently, in respect of some Offices, the demand does not have the effect of postponing the entry into the national phase until 30 months from the priority date (or later in some Offices) (Article 39(1)) and the acts for entry into the national phase must therefore be performed within 20 months from the priority date (or later in some Offices). However, in respect of some other Offices, the time limit of 30 months (or later) may nevertheless apply. See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

- ☐ (If applicable) This notification confirms the information given by telephone, facsimile transmission or in person on:

4. Only where paragraph 3 applies, a copy of this notification has been sent to the International Bureau.

Name and mailing address of the IPEA/
Mail Stop PCT, Commissioner for Patents
P.O. Box 1450, Alexandria, VA 22313-1450
Facsimile No. 703-305-3230

Authorized officer
Rayna Lover 
Telephone No. 703 308-9290 EXT 134

Form PCT/IPEA/402 (April 2002; reprint January 2004)

RECEIVED
WARE FRESSOLA VAN DER SLUYS
ADOLPHSON
MAY 27 2005
= = 9441-071 103.5.1
DOCKETED

PCT

ANALYTICAL PRELIMINARY REPORT ON FAT

(Chapter II of the Patent Cooperation Treaty)

(PCI Article 36 and Rule 70)

Form PCT/11P/EA/409 (cover sheet) January 2004

☐ This report is based on translations from the original language into the following language _____ which is the language of a translation furnished for the purposes of:

- ☐ international search (under Rules 12.3 and 23.1(h))
☐ publication of the international application (under Rule 12.4)
☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):

☒ the international application as originally filed/furnished

☒ the description:

pages 1-17 as originally filed/furnished

pages* none received by this Authority on _____

pages* none received by this Authority on _____

☒ the claims:

pages 18-19 as originally filed/furnished

pages* none as amended (together with any statement) under Article 19

pages* none received by this Authority on _____

pages* none received by this Authority on _____

☒ the drawings:

pages 1-12 as originally filed/furnished

pages* none received by this Authority on _____

pages* none received by this Authority on _____

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (specify): _____

☐ any table(s) related to the sequence listing (specify): _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

☐ the description, pages _____

☐ the claims, Nos. _____

☐ the drawings, sheets/figs _____

☐ the sequence listing (specify): _____

☐ any table(s) related to the sequence listing (specify): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability: citations and explanations supporting such statement**1 Statement**

Novelty (N)	Claims <u>NONE</u>	YES
	Claims <u>1-7</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-7</u>	NO
Industrial Applicability (IA)	Claims <u>1-7</u>	YES
	Claims <u>NONE</u>	NO

2. Citations and Explanations (Rule 70.7)

Claims 1-7 lack novelty under PCT Article 33(3) as being anticipated by Taylor. Taylor discloses a method for providing services over networks, which includes the essence of the invention as claimed. The essence is an implementation script file for declaring capacity of network devices (see Spec. fig. 1). Taylor teaches the same (see Taylor Figure 5, paragraphs 24, 50-51).

Claims 1-7 meet the criteria set out in PCT Article 33(4) and thus have industrial applicability because the subject matter claimed can be made or used in industry.

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:
KENNETH Q. LAO
WARE, FRESSOLA, VAN DER SLUYS & ADOLPHSON LLP
753 MAIN STREET, PO BOX 224
MONROE, CT 06468

PCT

NOTIFICATION OF TRANSMITTAL OF
INTERNATIONAL PRELIMINARY
REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Rule 71.1)

Date of mailing
(day/month/year) **06 JUL 2005**

Applicant's or agent's file reference

944-001.103-5-1

IMPORTANT NOTIFICATION

International application No.

PCT/IB04/00374

International filing date (day/month/year)

13 February 2004 (13.02.2004)

Priority date (day/month/year)

13 February 2003 (13.02.2003)

Applicant

NOKIA CORPORATION

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the *PCT Applicant's Guide*.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed invention is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the IPEA/ US

Mail Stop PCT, Attn: IPEA-US
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (703) 305-3230

Authorized officer

Bunjob Jaruchaisri
Telephone No. (703) 305-3800

Form PCT/IPEA/416 (January 2004)

RECEIVED
WARE, FRESSOLA, VAN DER SLUYS
& ADOLPHSON

JUL 11 2005

FILE 944-001.103.5-1

Extracto folio 124

F RMA T DE DIGITALIZACION
RELACION DE ANEXOS



Royal
Technologies S.A.
Servicios de Tecnología y Soporte

Expediente No		05690242.	No de Follo
Item		No de unidades	
1	CD		
2	DVD		
3	REVISTA		
4	LIBRO		
5	PERIODICO		
6	DISQUETES		
7	SOBRE DE MANILA		
8	SOBRE BLANCO TAMAÑO CARTA	1	
9	SOBRE BLANCO TAMAÑO OFICIO		
10	OTROS:		

Observaciones: Arte final

124

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

125
426
11

RECIBO OFICIAL DE CAJA : 05 - 67.450
FECHA : SEPTIEMBRE 5 DE 2005

SUPERINTENDENCIA Y COMERCIO
Radicación : 05090242 00000000 Foliares: 126
Fecha (IMP): 2005-09-05 17:07:34
Trámite : 011 PCI-PATENT 379 FASE NPL1 411 PRESENTAL
Dependencia: 2020 DIVISION DE MARCAS CREACIONES

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CAVELIER ABOGADOS	CONSIGNACION	BANCO POPULAR	050-00110-6	36494405	05/09/2005	48,923,640.

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	1 TRAMITES DE SOL. DE PATENTE DE IN	443,000.00
		TOTAL :	\$ 443,000.00

SON: CUATROCIENTOS CUARENTA Y TRES MIL PESOS

RESPONSABLE : 

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

060 05995-891-001-7

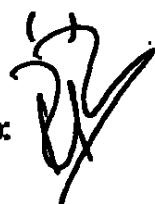
126 288

MINISTERIO DE INDUSTRIA Y COMERCIO
Radicación : 4509242 uniduen Folios: 126
Fecha (PRD): 2005-09-07 17:07:54
Trámite : 011 PCI-PRINT 079 PRE PRECI 411 PRESENTAC
Procedencia: 2104 DIVISION DE MARCAS Y DISEÑOS

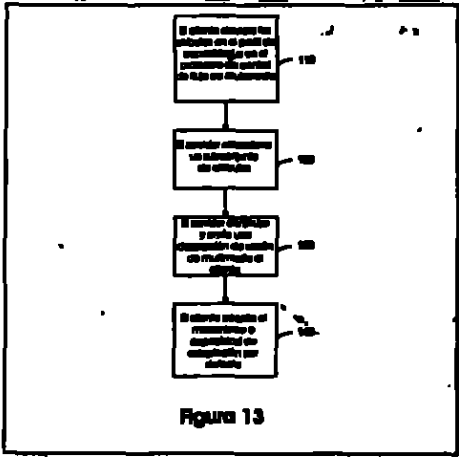
REQUISITOS NECESARIOS PARA PRESENTACION Y AGILIZACION DEL TRAMITE

	USUARIO	RADICADOR
PATENTE DE INVENCION	()	()
MODELO DE UTILIDAD	()	()
- Indicación de que se solicita la concesión de una patente.	()	()
- Datos de identificación del solicitante o de la persona que presenta la solicitud.	()	()
- Descripción de la invención.	()	()
- Dibujos de ser estos pertinentes.	()	()
- Comprobante de Pago de las tasas establecidas.	()	()
COMPLETA	()	()
INCOMPLETA	()	()
DISEÑO INDUSTRIAL	()	()
- Indicación de que se solicita el registro de Diseño Industrial	()	()
- Datos de identificación del solicitante o de la persona que presenta la solicitud.	()	()
- Representación gráfica o fotográfica del Diseño Industrial o muestra del Material que incorpora el diseño.	()	()
- Comprobante de pago de las tasas establecidas	()	()
COMPLETA	()	()
INCOMPLETA	()	()
ESQUEMA DE TRAZADO	()	()
- Indicación de que solicita el registro de un Esquema de trazado.	()	()
- Datos de identificación del solicitante o de la persona que presenta La solicitud.	()	()
- Representación gráfica del esquema de trazado	()	()
- Comprobante de pago de las tasas establecidas.	()	()
COMPLETA	()	()
INCOMPLETA	()	()

Firma Responsable:



Fecha:



128

Industria y Comercio SUPERINTENDENCIA		SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO DIVISION DE NUEVAS CREACIONES EXTRACTO PARA PUBLICACIÓN SOLICITUD DE PATENTE DE INVENCION PCT	
(21) N° de solicitud: 05- 90242		(51) Int Cl: G06F	
22) Fecha de solicitud:		(71) Solicitante(s) NOKIA CORPORATION	
(30) Prioridad (31) 80/447.284 (32) 13/02/2003 (33) US 80/448.284 14/02/2003 US 80/448.288 14/02/2003 US 80/448.308 14/02/2003 US		(72) Inventor(es) EMRE BARIS AKSU IGOR DANILO DIEGO CURCIO DAVID LEON VÍKTOR VARSA RU-SHANG WANG (74) Apoderado: EMILIO FERRERO	
(85) Fecha límite inicio fase nacional: 13/08/05 (86) Datos relativos a la presentación de la solicitud PCT Fecha de presentación de la solicitud: 13/02/2004 No. de solicitud PCT/IB2004/000374		(87) Publicación internacional Fecha: 28/08/2004 N° publicación: WO 2004/072765 A2	
(54) Título: MÉTODO PARA SEÑALIZAR LA ADAPTACIÓN DE CALIDAD DE FLUJO Y LOS MECANISMOS DE CONTROL EN UN FLUJO DE MULTIMEDIA			

Reivindicación(es):

1. Un método para señalar y negociar entre un cliente y un servidor en un servicio de flujo de multimedia, en donde una pluralidad de mecanismos o capacidades de adaptación para uso en el servicio para el suministro de datos están soportados por el cliente, cada mecanismo o capacidad de adaptación tiene un atributo, dicho método está caracterizado por:

- el cliente suministra información indicativa de los atributos que definen los mecanismos o capacidades de adaptación que son soportados por el cliente;
- el servidor selecciona uno o más de los atributos con base en la información suministrada; y
- el servidor suministra información adicional indicativa de los atributos seleccionados de modo, que le permite al cliente conocer el uno o más mecanismos o capacidades de adaptación definidos por el uno o más seleccionados por el servidor.

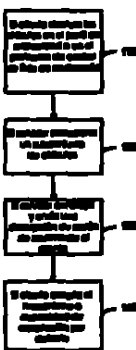


Figura 13

129

REPUBLICA DE COLOMBIA
SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

Bogotá,
2020

Doctor(a)
FERRERO EMILIO
Apoderado(a) y/o Representante de
NOKIA CORPORATION

REFERENCIA	Radicación No.	5 90242
	Solicitud internacional	IB2004/000374
	Fecha inicio fase nacional	13/09/2005
	Trámite	11
	Evento	379
	Actuación	430
	Oficio No.	8485

Como resultado del examen de forma, realizado con fundamento en el artículo 38 de la Decisión 486 de la Comisión de la Comunidad Andina, artículo 27 del Tratado de Cooperación en Materia de Patentes (PCT), regla 51 bis del Reglamento y Circular Única de la Superintendencia de Industria y Comercio, se le comunica que:

1. Si fuere el caso, el solicitante debe adjuntar la traducción de los anexos del reporte de examen preliminar internacional (Art. 36.2.b) del tratado PCT.
2. La solicitud no contiene la copia del documento en que consta la cesión del derecho a la patente del inventor al solicitante o a su causante. (Art. 26-k) Decisión 486.

En cumplimiento de lo dispuesto por el artículo 39 de la Decisión 486, se le requiere para que dentro del término de dos meses siguientes a la fecha de notificación del presente oficio, complete los requisitos anteriormente enunciados. En caso de no dar cumplimiento al presente requerimiento, la solicitud se considerará abandonada y perderá su prelación.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Unica No.10 de 2001.

ALIX CARMENZA CESPEDES DE VERGEL
Jefe de la división de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista de
fecha 16 SET. 2005
adpall